

Historic, Archive Document

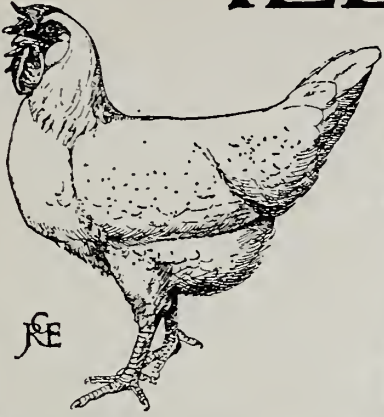
Do not assume content reflects current scientific knowledge, policies, or practices.



The Yokohama Fowl.

(Reproduced from an original Japanese painting, by kind permission of W. Richardson, Esq., Northlands, Horsham.)

THE ILLUSTRATED POULTRY RECORD



VOL. II.—No. 5.

February 1, 1910.

Monthly Sixpence Net.

DIARY OF THE MONTH.

EDITORIAL NOTICES.

Telegrams: "CHICKENDOM." Telephone: 1999 P.O. CITY.
ENTERED AT STATIONERS' HALL.

The Editor will be glad to consider any MSS., photographs, or sketches submitted to him, but they should be accompanied by stamped addressed envelopes for return if unsuitable. In case of loss or injury he cannot hold himself responsible for MSS., photographs, or sketches, and publication in the ILLUSTRATED POULTRY RECORD can alone be taken as evidence of acceptance. The name and address of the owner should be placed on the back of all pictures and MSS. All rights of reproduction and translation are reserved.

The Editor will be glad to hear from readers on any Poultry Topics, and all Queries addressed to the paper will be answered by experts in the several departments. The desire is to help those who are in difficulty regarding the management of their poultry, and accordingly no charge for answering such queries is made.

The Annual Subscription to the ILLUSTRATED POULTRY RECORD at home and abroad is 8s., including postage, except to Canada, in which case it is 7s. Cheques and P.O.O.'s should be made payable to Brown, Dobson, and Co., Limited.

The ILLUSTRATED POULTRY RECORD is published on the first of every month. Should readers experience any difficulty in securing their copies promptly they are requested to communicate immediately with the Editor. The latest date for receiving advertisements is the 20th of the month preceding date of issue.

The utmost care is exercised to exclude all advertisements of a doubtful character. If any reader has substantial grounds for complaint against an advertiser he is requested to communicate at once with the Editor.

Bright Prospects for Poultry-Keepers.

Hope is ever the predominant feeling at this season of the year. The very sense of uncertainty as to what the breeding period will bring forth is an incentive. Last year's disappointments and discouragements are buried. It is satisfactory to say that the prospects for the coming months are bright indeed for all sections of poultry-keepers. Much will depend upon the weather of the next few weeks. That the unfavourable conditions which prevailed during the spring months of 1908 and 1909 may not be repeated is our earnest hope, but such cannot be controlled, and we have to make the best of it. The wise poultry-keeper prepares for the worst, and thus is able to take full advantage of the best. The breeders of pure-bred stock should keep in view the needs of Colonial and foreign buyers, which trade, if vendors on this side rise to the occasion, will become larger and more important than ever before. Opportunities, hitherto denied, are now afforded for reaching purchasers abroad. Good birds at good but not extreme prices will be required increasingly. On the other hand, those who may be termed practical poultry-keepers, by reason of the declining foreign supplies, increasing demand for eggs and poultry, and the prospects of a great revival of trade, giving greater purchasing power to all sections of the community, will be able to find ready and profitable outlets for their produce if they set themselves to provide what is needed when it is required. More and better poultry, earlier hatching, and greater attention to marketing on the best lines must be pressed upon those who are engaged in this business. Failure in these respects will be serious indeed. One danger we must guard against—namely, that unless the increasing demand for produce can be

met, prices will be forced to a point when consumption will be checked. To avoid that is the interest of everyone concerned.

The Record of 1909.

Many of our readers will have read in the general Press Mr. Edward Brown's annual summary, in which he focuses the work done in respect to the poultry industry in 1909. There is much in this statement upon which comments might be made, but we content ourselves with a brief epitome. It is evident that the writer believes there is great prosperity in store for poultry-keepers of all grades, owing equally to advancing demand and reduction of foreign supplies. On the last-named point we quote in our Marketing Section those paragraphs of the report which give the figures and averages. In making reference to the way in which small-holders and allotment-keepers are taking up poultry, he says :

We find a realisation of the important place poultry will hold if their enterprise is to prove successful, not only in so far as produce is concerned, but in advancing the fertility of the soil. As a proof of this it may be mentioned that some districts of Belgium, which I have visited during the autumn, twenty years ago were arid and sandy, but poultry kept largely thereon have so improved the land that they are now being turned into market gardens.

The report of the Scottish Departmental Committee, the close of the College Poultry Farm, Theale, and the burning question of foxes *versus* poultry are mentioned, as is also the Royal Commission on Foreign Exhibitions, which should be helpful to British poultry-breeders. As might be expected, reference is made to the Development Act of 1909, largely on the same lines as in our own columns. And upon the all-important point of marketing we find :

There can be no question that in many parts of the country the formation of co-operative egg and poultry centres, either independent or as part of the work of agricultural trading societies, would give a great impetus to the poultry industry by providing a much more remunerative outlet for produce than exists at present.

The Australian Leghorn.

The schedule of the laying competition to be held at the Government Poultry Station, Roseworthy, South Australia, during the year ending March 31, 1911, is of peculiar interest as indicating the estimation in which the White Leghorn is held by the authorities concerned. It will be remembered by those who take a wide interest in such contests that the last competition comprised two sections—one for the light breeds and the other for the heavy breeds ; but the present classification has been extended to include three sections, as follows : Section I., White Leghorns only ; Section II., other light breeds, including Leg-

horns, except White ; and Section III., heavy breeds. The prizes for highest commercial value are equal in each section, with special prizes for the heaviest yield. The previous division was based upon the principle that whilst the laying type should be developed for egg-production only, the heavier breeds should receive due consideration as regards their other characteristics, and not be unduly selected for the one common purpose of these competitions. Such particular attention has, however (or perhaps consequently), been given to the selection of White Leghorns, and so remarkable have been the results attained by the general levelling-up of this variety, that it is now provided with an exclusive section in order to prevent any possible discouragement of those who use other breeds and varieties for their strain-making. This notable recognition of breed in connection with prolific strain-making provides some food for thought, and should lead some of us to review our methods of dealing with breeds.

Foreign Trade in Stock Birds.

One of the most satisfactory results of the wide and increasing circulation in British Colonies and foreign countries of the POULTRY RECORD, has been a great impetus to demand for British-bred poultry of all grades, as testified by many of our advertisers. But we have only touched a small part of that trade, which is capable of enormous extension. To secure it, several essentials must ever be kept in mind. That we have the stock in this country is unquestionable. A great difficulty has been the bringing of buyers and sellers into touch. This we are endeavouring to accomplish, not alone by means of what we publish, but in other ways which need not be specified, save to say that recently considerable attention has been given by the POULTRY RECORD in this direction. Another is that of language. Buyers in many cases cannot write in English, and our breeders are not linguists. Here, again, we have made arrangements so that communications in foreign languages can be dealt with and replies sent in the same tongue, which cannot fail to facilitate the international trade. To secure the full results we must have the support of breeders by their announcements in our columns. Those whose names appear regularly will assuredly obtain this business. In our December issue were given some particulars as to the arrangements made by the Exhibitions Commission for bringing British stock prominently forward at Brussels during the current year. If breed societies and breeders take advantage of this opportunity, it cannot fail to do much to advance their interests. It is the first time such an attempt has been made, and it deserves cordial support.

Bitten Biters.

Over-reaching oneself is by no means unknown in the commercial world, and an example was afforded at Christmas by holders of foreign turkeys, who, in order to corner the market to a modest extent, kept back their stocks until it was too late, and were compelled to sell out at ruck prices. The combination of shortage in home produce of the best qualities with large demand had the effect of advancing prices to a standard seldom, if ever, known in any previous year, and foreign goods shared in the benefit up to a given point. But the vendors held out for bigger figures until the market was lost; and then came the slump, for buyers had been com-

birds, but affords every encouragement to farmers in this country to produce more and better turkeys and to send them to market in the right way at the right time.

Specialist Club Year-Books.

An attractive year-book is undoubtedly an excellent means of popularising a breed and calling attention to the merits of a progressive institution, and for that reason these interesting publications are a welcome sign of the more enterprising methods adopted by club officials at the present day. The time has gone by when club secretaries could afford to confine their attention to sending out the annual demand for subscrip-



A MODEL DUCK-PEN.

[Copyright.]

pelled to prepare for their Christmas trade by other classes of food, with the result that the turkeys had to be cleared. Fair turkeys were purchasable at 5s. each, and 7½d. per pound was a common figure. However satisfactory this may have been to consumers, it must mean heavy loss to producers in other countries. Fortunately, our own people did not suffer much, —at least, those who had good quality birds to sell and sent them up at the right time. We never remember having seen so sparse a show of first-class turkeys. The lesson of the Christmas season is not only for the salesmen of foreign

tions. Nowadays people require something for their money, and fanciers who join specialist clubs expect at the least to be interested, if they are not materially benefited. Some of the year-books published by the more wealthy clubs are beautifully produced, artistically illustrated, and contain a good deal of reading matter that compares favourably with the formal announcements and lists of members that are still issued by less progressive clubs. There can be no doubt that success in specialist club management depends largely upon catering for the multitude in the most attractive manner possible.

THE TRAINING OF A POULTRY-FARMER.

By W. M. ELKINGTON.

IN all probability no business has been more grossly misrepresented than poultry-farming by the flimsy nature of the training that custom has decreed to be necessary for would-be participants. There are still many people who apparently believe that a poultry-farmer needs no qualifications whatever, and that this is therefore a business very well suited to an individual who has been found incapable of holding his own in other walks of life. But the more advanced section of the community frankly recognise the fact that throwing corn to hens and collecting eggs do not constitute the sole duties of a poultry-farmer, and consequently it is considered desirable to follow the orthodox course by spending three or six months as a pupil, after which the average individual is supposed to be qualified to commence a poultry-farm on his own account, and advertise for pupils of his own. Rumour has it that pupil-farming is a sound business proposition; indeed, on some establishments the pupils appear to be the only living creatures that pay their way. No wonder they are so popular, or that there is a probability of poultry-farming becoming but a subsidiary branch of the great pupil industry.

About three years ago I visited a poultry-farmer in the East of England, in connection with some difficulties in which he found himself on account of the blank refusal of his fowls to have anything to do with egg-production. I found a large stock of so-called Lincolnshire Buff hens of exceedingly doubtful age, which had just been purchased as pullets, not to mention a complication of diseases which were fast reducing the stock. It was the most weird parody of a poultry-farm I ever came across, but it boasted a pupil, and I gathered that this young man talked of one day running a poultry-farm and taking a pupil in his turn. It was a pathetic situation. Here was a man totally inexperienced, helpless in the face of difficulties, and possessed of a worthless stock of diseased old hens, presuming to teach the mysteries of poultry-farming to a lad whose career in all probability depended entirely upon the instruction he received at this critical time. I hope and believe there are very few cases so bad as this, but the mere fact that pupils are regarded by many comparatively inexperienced poultry-farmers as an essential part of the establishment, and, in many cases, the main source of income, represents a serious state of affairs. No wonder the industry of poultry-farming is so seldom free from failure!

There can be no general agreement regarding the period of apprenticeship a would-be poultry-farmer should undergo, because this is an industry in which individualism finds more scope than in others. A poultry-farmer may be either born or made, and though a training of some kind is essential, it is obvious that in the former case his education will be completed in a much shorter time. A person possessing the natural aptitude for grasping the important details of this business, an enthusiasm for his work, and a keen business instinct will grasp the rudiments of the industry whilst a dull-witted individual is learning the names of the different breeds. A well-known poultry-farmer once told me that he could pick out the people likely to make a success before they had been with him a week, but that it was useless telling the other persons they were not suited to the business. Six months' training he considered sufficient to give a smart man a thorough insight into the work; but for the others, six years would never make them into more than indifferent workmen. Consequently, as very few people care to accept a candid opinion of themselves and their prospects as others see them, an opinion such as that quoted is accepted generally, and a great many people who have no natural aptitude fondly imagine that by putting in six months' residence on a poultry-farm they graduate as properly equipped poultry-farmers, to whom success will come as a matter of course.

Then, again, a great deal depends upon the character of the instruction provided, and I am afraid that in many cases the pupil is left to pick up what information he can for himself. One gentleman told me that upon arrival at the poultry-farm to which he had been apprenticed at a substantial premium, the proprietor expressed the wish that he would enjoy himself and have a good time, mentioned where he might find several things if he required them, and added that he had only to ask questions if information was desired on any specific point. After spending an idle week, my friend asked if he might be allowed to feed the stock, and was referred to the poultry-man, who was, he assures me, the only person who gave him any instruction whilst he remained on that establishment. By way of contrast, I heard of a young fellow, fresh from a public school, who was set to do the dirty work about the house and farm buildings, and was regarded by his supposed mentor as a mere convenience. These cases are exceptional, no doubt, but they

serve to prove the unsatisfactory nature of the prevailing custom of regarding a poultry-farm pupil as an article of commerce.

Poultry-farming is a business of such a peculiar nature that great care is necessary in selecting a suitable training establishment for a pupil. The grave doubt that exists regarding the possibility of making market poultry-farming pay on a small holding devoted entirely to that purpose should check the aspirations of many persons; but unfortunately this particular kind of poultry-farming is the only one recognised by the average outsider, who does not realise that specialism is the vogue of the day, and consequently imagines that a superficial knowledge of the feeding, rearing, and general management of fowls is sufficient equipment to enable him to engage successfully in poultry-farming. There are quite a number of establishments whose proprietors undertake to give a pupil instruction in every branch of the industry during a three or six months' course, including breeding and preparation for exhibition, breeding for egg-production, fattening, &c., and at the end of that time one can imagine that a pupil, who had not been fortunate enough to form some definite ideas about the advantages of specialising, would be in possession of a complicated mass of information that would prove exceedingly cumbersome in future operations on his own account.

A good general knowledge of poultry-keeping in its various branches is very desirable, but it is not absolutely essential for a pupil who contemplates specialising in one particular branch, and when that person devotes only three or six months to his apprenticeship he makes a very great mistake by attempting to master the whole art of poultry-keeping, in which he must ignominiously fail, when he might be acquiring a valuable store of knowledge and experience relating expressly to his own particular branch. No doubt the majority of pupils make the preliminary mistake of supposing three months to be sufficient in which to learn all about poultry-farming, for it is proverbial that the more one learns the more one discovers there is to know. In the three or six months' course of training a pupil may learn much or little, according to his mentor and his own ability, but the knowledge gained at this time is of an elementary nature, and is, or should be, merely the foundation upon which detailed experience can be built up by degrees. If the foundation is sound, the elementary education being on the right lines, the result should be entirely satisfactory; but it is obvious that the future of a pupil depends to a very large extent upon his preliminary training. Without going so far as to condemn, root and branch, the present custom of receiving pupils on a poultry-farm for a few months, and encourag-

ing them to imagine that they are henceforth qualified to manage an establishment for themselves or for other persons, I think there are many weak points about it; and unfortunately the worst feature of the system is the cupidity displayed by a great many unqualified and unsuitable persons, who advertise for and obtain pupils merely for the sake of the premiums and cheap labour. It is these who bring pupil-farming into ridicule and disrepute, for I am well aware that there are a number of well-established poultry-farms in various parts of the country where pupils receive a sound and systematic training, either general or specialist, and there can be no doubt that an apt learner and a willing worker can acquire a large amount of information of the very best kind upon such establishments. It is not merely the practical work that a pupil should become acquainted with. He must have a sound and sensible idea of the general theory of the industry, and, above all, he must learn to be a business man, because there have been many talented poultry-breeders and farmers who have nevertheless failed through lack of business training and business qualities, which are absolutely essential to the success of a modern poultry-farm.

Particular stress must be laid upon the desirability of specialising, although I am afraid many of those poultry-farmers who endeavour to give their pupils a smattering of knowledge in all branches merely cater for the demand, for, as I have said, the average outsider knows nothing of the specialist branches, and the average raw pupil has only one conception of poultry-farming. An ambition to embark on this fascinating industry comes to most people at some time in their lives. Many, acting upon the advice given by "Mr. Punch" in another connection, think better of it; but others, without even knowing what poultry-farming really is, discover that the orthodox plan is to become a pupil, and set out to learn what they believe to be a sound business enterprise, but which very few persons of ample practical experience would dream of venturing upon. The weak point is the public ignorance concerning poultry-farming, its various branches, and its possibilities, probabilities and impossibilities, for which ignorance we have primarily to thank the general Press. At various times the most remarkable statements have been circulated, for and against the industry, and though it is to be hoped that, with so many poultry columns in the general papers, a clearer understanding may gradually be disseminated, there are still some daily papers of world-wide renown that seldom quote a reference to poultry-keeping without misrepresenting the case.

If we can get the general public to realise that poultry-farming is a difficult industry, in which

natural aptitude, backed by a thorough training, is essential to success, that it is a business in which the specialist is most likely to succeed, and that the commonly accepted idea of poultry-farming for market purposes on a small holding devoted solely to that purpose has been very properly exploded these many years, we shall have a better class of pupils coming for instruction, already equipped with workable theories, and with some definite ideas about the branches they intend to take up. The result will be that instead of attempting to acquire a complete know-

ledge of poultry-keeping in all its branches, the intending table specialist will go to Sussex and learn the business as it is there successfully carried on; the laying specialist will go to a farm where he can devote his attention to pedigree breeding and its ramifications; and the exhibition specialist will go to a large fancier's establishment, whilst the would-be market poultry-farmer can have no better mentor than an extensive and successful farm poultry-keeper, for there can be no doubt that the future of market poultry-keeping is on the farm.

HATCHERIES AND DAY-OLD CHICKENS.

By EDWARD BROWN, F.L.S.

GREAT though the growth has been within recent times of the trade done in baby chickens, it must not be thought that it is altogether new. For many years nailmakers in the Bromsgrove district of Worcestershire have specialised in the sale of these young birds. About the months of May and June I have seen in the Birmingham and other Midland markets considerable numbers, and as far back as twenty years ago. Even then it had been a long-established business. But in these cases with each brood was a hen—the mother who had done the work of hatching. The custom was for the workers named above to set the hens in their warm places of labour, and sell hen and brood in the way indicated. The farmers of that district found this an excellent method of getting rid of their old birds, which as “broodies” realised a higher price when sold with a dozen chicks than could be obtained in any other way. It was thus my first acquaintance was made with a trade that has now assumed large proportions.

It is now about fifteen years ago since I came across the next stage of development. That was in France—namely, when visiting the Seine-et-Oise Department, especially the large establishments at Gambais and Mantes, where the earlier practical operation of incubators on an extensive scale was conducted, and at which two systems were followed. One was to hatch eggs for farmers and others in the district, and the other to sell in the infantile stage chickens from eggs laid on the place itself, or purchased. By the time named these trades had grown to considerable proportions, especially the latter. The great discovery of our French *confrères* was that these tiny birds could be sent long distances without any, or only a small modicum of, loss by death, and that they suffered no ill-effects from the journey

if packed properly and dispatched at the right age. To breeders across the Channel must be given the credit for paving the way which we and others have since trodden. There may have been breeders here who have done the same. If so, it was upon a small scale.

One part of my duty in serving the poultry industry has been to learn methods adopted in other lands, and endeavour, when suitable, to adapt them to our own conditions. I was very deeply impressed with both of the systems named, seeing in them great opportunities for development. Therefore, as far as possible, both were made known. Each seemed to offer equal prospects. Strange to say, one—that of hatching eggs at a given price—has never been adopted to any but a limited extent, whereas the other “caught on,” and has grown enormously. All over the country the trade has steadily, and even rapidly, advanced; establishments have been founded for this business—though smaller poultry-keepers contribute largely in the aggregate to it—and hundreds of thousands of day-old chicks are disposed of every year. Two influences have largely contributed to this satisfactory result—namely, the successful use of incubators on the one hand and the great increase of utility poultry-keeping on the other. The former made hatching on a large scale possible and profitable, and the other created the requisite demand, without which all efforts would have been vain; for, be it noted, such a system was not, and is not, of any use for fanciers beyond a very small degree. Eggs from highly-bred stock are not vigorous enough for this purpose, even if there was a demand for the chickens; and the birds do not travel nearly so well as those produced by hardier and more naturally-kept stock.

So much for the story of this trade. It is now

my business to show what is involved, and also the methods which have proved most successful. That demand is increasing every year is unquestionable, but that as yet it is small as compared with what will be seems equally true, for few farmers have learnt that it affords a valuable and inexpensive method of renewing their stock and giving them that fresh blood which they must obtain from time to time. Moreover, many who do not operate on a sufficient scale to warrant the purchase of an incubator are able to secure chickens in being earlier than would otherwise be the case. That is a great gain.

To the vendor of day-old chicks the essential factor is obtaining a sufficient supply of eggs when required from hardy stock kept under conditions calculated to maintain natural vigour. Fowls within small runs are not nearly so satisfactory for this purpose as those at liberty. Hence the business is essentially one for the farmer-poultry-keeper who has abundance of space for his birds, or for those who are able to organise a steady supply of reliable eggs from farmers. That the former has a great advantage over the latter is apparent, for he can ensure that these are of the breed or cross desired, and that the eggs are absolutely fresh. The risks of travelling

are also considerable. At some of the hatcheries this has been largely overcome, but not wholly so. My own belief is that but for the difficulty in obtaining eggs the trade would have by this time assumed much greater proportions. Of course eggs can be got in any number during the spring months, but infertility and weak embryos form the *bête-noire* of those engaged in the work. It is useless hatching when there is no demand. Hence eggs must be good and early, and of the breeds which customers require. We hear of places where 3,000 chickens are hatched per week. To produce these will be needed 4,000 to 5,000 eggs in the same period of time. That means, even in the spring, the produce of 1,000 to 1,200 hens. It will be seen, therefore, that the business needs forethought, organising ability, a large head of stock,

knowledge of how to manage poultry so as to make them lay, capital, and hard work. The indigent, the indolent, the inefficient, would utterly fail.

Equally important for the day-old chicken trade is the provision of incubating power of sufficient capacity. For this work hens would be altogether unreliable, and could not be obtained when required. To produce 1,000 chickens per week would need 300 hens sitting at the same time. Few districts could provide such a number in March and April. Hence incubators are a prime necessity, and, as already indicated, but for the introduction of these valuable machines the day-old chicken trade could not have grown to the extent it has. And as the period of demand is usually about twenty weeks, the hatching capacity must



HOW DAY-OLD CHICKENS ARE PACKED.

[Copyright.]

be considerable to meet the requirements of customers to whom delay would be serious and might cause great loss. For each thousand chickens sold per week there must be accommodation for 4,000 to 5,000 eggs, which means 40 to 50 100-egg incubators or half that number of 200-egg machines. Thus the capital invested and the labour involved are considerable. It is small wonder, therefore, that in America, where this branch of poultry-keeping is growing rapidly, mammoth incubators heated by a single furnace are finding a considerable amount of favour. If they prove successful the work will be greatly simplified.

Abundant supply of eggs and provision of incubators are not enough. Both might be there, and yet the result be unsatisfactory. It is the chicken, hardy, healthy, and livable, capable of

standing the journey from place of hatching to that of growing, which is required, and *pro rata* to the number of eggs used, the incubators employed, and the labour involved. Incubators must be reliable and have a fair chance. To that end their accommodation is a matter of great importance. My own belief is that, as pointed out in a previous article (page 72, October, 1909), the incubator-room must have an atmospheric capacity of $1\frac{1}{2}$ to 2 square feet for every egg, which means that for 5,000 eggs undergoing the process of hatching the building in which they are placed, if 8ft. high and 20ft. wide, should be 60ft. to 80ft. long, having a floor space of 120 to 160 square feet. I am inclined to the opinion that division into two or three rooms would be better. In addition it should be sweet and clean, with an even, abundant supply of fresh air, brought in below the level of the machines. Many incubator-rooms fail because they are overcrowded and ill-ventilated, leading to bad hatching and reduced vitality in such chickens as make their appearance. And, above all, there must be skill in hatching. The differences in this respect are remarkable. One operator will obtain a very much higher percentage of chickens than another under identical conditions, and the profit depends upon the percentage secured. Speaking generally, it takes two new-laid eggs, or one and a half fertile eggs, to produce one live chicken. If the operator falls below these averages there is something wrong, and the returns are correspondingly reduced.

Experience has shown that the best time to dispatch young chickens is when they are 24 to 30 hours old. They should be kept in the machine until that time, so that they may be thoroughly dried and get firmly upon their legs. A day or two's delay means that they do not travel nearly so well. Why that should be so has never yet been discovered, but it is undoubtedly correct, as they feel the exposure much more than when sent off at the age named. Something, of course, depends upon distance to travel and period of the year, but practical observations have shown that the safest time is that already stated. I have known chickens delayed *en route* for two or even three days, and yet arrive safely and in vigorous condition, and others travel with equal success over long distances. The case which revealed to me the possibilities of this trade was the bringing of a lot of chickens from France to Ireland, across two seas, with four or five changes *en route*, and occupying about thirty hours. That was fifteen years ago, and has been confirmed in thousands of cases since that time. It will be evident, therefore, that orders in advance are essential to the success of this business.

The class of package employed must be deter-

mined by the distance which the birds have to travel. The boxes at first used in France were substantial, well made, and fitted on one side with a small tin trough in which food was placed. For a long journey in cold weather it would be safer to use a box of that kind, but in our own country the extra expense involved is not required, as light wooden boxes similar to those shown in the illustration are sufficient for the purpose. These have ventilating holes in the lid and on the sides just below the top, and are either fitted with a handle of thick cord or tied down with thick string, for carrying. The usual size for a dozen chickens is 14in. by 9in. and 9in. high, and for two dozen about 15in. square. Such boxes are sold at a reasonable rate by appliance makers, and are really cheaper than if home-made. Before the lid is fastened on, a piece of flannel should be fixed so that it will sag down inside, and the chickens can get their backs up against it, and in cold weather a handful of loose hay may be placed between the flannel and the lid to give body thereto. It is a good plan to fill the corners of the box with soft hay, and the bottom should be covered to the depth of three inches with cut chaff, in which some coarse oatmeal, dari, and canary seed is mixed. The chicks should not be fed before leaving, but if they desire food it is available in the chaff; and for long journeys a lettuce hung at one side is desirable. They should, moreover, be packed in a warm place, and it is wise to see that the boxes have been warmed before they are used. Prominent labels declaring the contents to be "Live Chicks," and clearly written addresses, must be affixed. The vendor of these baby chickens must know his "Bradshaw." To select the right train, with connections, is all-important, for rapid and safe transit is now the object. Railway servants are very good indeed, and I have several times seen them remove the boxes into an office at a junction rather than allow them to be exposed on a bleak platform. Yet it is better to study out the route so as to avoid delays, and to give the recipient abundant notice when the birds will be dispatched, in order that everything may be ready for their reception.

Upon the point last named the following may be quoted from Leaflet No. 157 issued by the Board of Agriculture :

Not the least important point is the treatment of the chickens on arrival at their destination. Unless that is favourable, all the efforts of the vendor may be lost. It is to his interest to satisfy his customers by sending them hardy birds, but he has no means of controlling them when once they have left his charge, and the responsibility rests with the purchaser. There is nothing better than placing the youngsters for an hour or two in a brooder heated to as near 100deg. F. as possible, and in the absence of such an appliance excellent results have

been obtained by putting them into an oven, in a flannel-lined basket, leaving the door open, not higher than the temperature named; or it will be enough if the basket is placed near the kitchen fire. They should then be given a good feed of warm steeped oatmeal or biscuit-meal, and have a little warm milk to drink. If broody hens are available, the best results will be obtained by rearing the chickens under them, if they have travelled a considerable distance. One or two should be given to her first, and if she takes kindly to these the remainder may be slipped under her wings. Where rearers are to be employed (and small, inexpensive appliances are now sold), these must be well warmed up, say, to 95deg. F., and the chicks placed therein. Around or in these brooders, according to the class, cut chaff should be littered, and among it

scattered what is known as the dry feed. In an hour or two the chicks will begin to scratch and seek for food.

For those who have capital, knowledge, skill, and power of organisation, this branch of the poultry industry offers considerable opportunities, but it demands constant and unremitting labour on the part of the operators during the busy season. The trade is bound to grow largely as farmers and small holders develop the poultry side of their work. Further, it is probable that the sale of young ducklings might be developed to an equal extent, and thus another branch be added. To attempt that would certainly be worth while.

THE ERRORS OF POULTRY-KEEPING.

By C. E. J. WALKEY.

IN one's capacity as a lecturer, it is not difficult to see that many keepers of poultry fail to make money, sometimes from ignorance, often from inattention to detail; and, as regards the latter, it makes no matter whether the birds are pure-bred, cross-bred, or mongrels. In these days of trap-nests it would almost always pay anyone with a flock of 100 hens or over to pay an employé on farm or holding a small sum weekly to feed the flock morning and evening, or, at any rate, once a day, so as to leave the owner of the birds time enough in which to attend more closely to the welfare of the young and growing birds, and, during the winter months, to the trap-nesting of pullets, for it must be obvious to all that a few good layers are more profitable than a host of bad ones. Given that a farmer's wife is a very busy woman, it would still be possible for her to make time for using a few, say a dozen, trap-nests if, as suggested above, her servant saw to the general flock, which, as a rule, only need a few handfuls of corn morning and night, but which may be, and often are, in houses some distance from the homestead.

There is no doubt that for the main flock movable houses are best. Put out on the arable land directly it is ploughed or, after the corn is cut, on the stubbles, the birds will find a greater amount of natural food and will do infinitely better than if kept in the farmyard. But the young pullets just coming on to lay need closer attention, and may best be kept nearer home. For these pullets, and only for them, some simple form of trap-nest should be devised or purchased, which nests must be visited at any rate four times daily. Each of the pullets must carry a leg-ring stamped with her own number, a very inexpensive thing

indeed, and the egg when taken from the nest after laying must be marked with the pullet's own number and a close record kept of each bird's performance. The birds which, hatched at the proper time of year, laid over one hundred eggs in their first six months of laying, *and only these*, may be kept as breeding fowls in their second season, while all the rest may advisedly be sold towards the spring, and should fetch from 2s. 6d. to 5s. each, according to how they are bred. In no other way than by the use of trap-nests can actual laying capacity be guaranteed, but the profits, even from a purely market point of view, without counting money from the sale of sittings of a pure or first cross variety, are out of all proportion to the extra trouble taken.

Trap-nests are of use in another way also. On most farms the spare cockerels are eaten in the household or are sold to dealers or higglers, and as the constitutions of birds vary just as do those of their mistresses, it will be found possible by the use of these nests to ensure the hatching of hardy and robust stock as well as fine layers. Now, the hardier a bird is the better "doer" it is, so that a saving of foodstuffs will result, and the bird will come to killing earlier. It will be seen, therefore, by those reading these pages that anyone with fair health should, by the expenditure, every five years or so, of about 12s. for trap-nests, be able to make a far greater profit than is usually the case on farms of to-day.

So much for the laying stock. Now let us turn to the chicken. On page 6 of leaflet 114 of the Board of Agriculture (which may be had free by writing to the Secretary, the Board of Agriculture and Fisheries, 4, Whitehall-place, London, S.W.—by putting the magic letters,

"O.H.M.S." at the top of one's envelope even the penny stamp is unnecessary) there is a table giving the relative amount of foodstuffs necessary for growing chicken of different weights, and from this table it will be seen that, roughly speaking, while to 100 chicken each weighing 1lb. it will be wise to give $13\frac{1}{2}$ lb. of food a day, for ten cockerels weighing 10lb. each—e.g., the same live weight as before—only $3\frac{3}{4}$ lb. of food is necessary! Therefore if, as is too often the case, birds of all ages are fed together, either those which are full grown or nearly so will get too much food, or those younger ones which are growing fast will get too little. In either case there will be a serious waste of food and, consequently, of cash.

To feed one's small chicken entirely separate from the ordinary home flock is difficult unless they be reared in brooders, but to provide cheap wired runs with an entry so small that only birds under two months old can enter is within the reach of all, whether farmers or cottagers. Again, the profit will be so great that the labour will hardly count at all.

Besides the fact that full-grown birds require far less weight of food daily in proportion to their weight than do the younger ones, there is another reason why greater attention should be paid to feeding. Neither pullets coming on to lay nor hens which are laying must be given an excess of heating or fat-making foods, for a bird can only assimilate a certain proportion of heat, fat, and flesh-forming ingredients in its daily ration; all surplus matter turns to waste, to internal fat which tends to stop a bird laying. Watch your heaviest layers, handle them occasionally, and, while they will be fit and in good hard condition, all will be on the lean side. That is why so heating a foodstuff as maize, admirable though it is in raw, cold weather, should rarely, if ever, be

given when mild or muggy days intervene. By reason of the large amount of sugar in its composition it is very forcing, but there is such a thing as having too much of this.

A few more words of advice, and the purpose of this short article will be fulfilled. A bird, like a human being, needs a certain amount of space in which to sleep and a great amount of fresh air to breathe. Most poultry-keepers put many more birds in a house than they should do, and a great number keep those houses far too warm o' nights. There should always be sufficient ventilation to keep the atmosphere of a hen-house pure and sweet in all weathers, by night as well as by day, but this ventilation should as far as possible be above and on one side of the birds only. A house 6ft. long, 5ft. wide, of the lean-to type, $5\frac{1}{2}$ ft. high in front by 4ft. at the back, will comfortably hold fifteen birds. It should have a space open but covered with wire netting about 18in. deep right along the top of the front. To prevent rain driving in, a board 6in. wide may be nailed to the front of the roof projecting outwards and sloping downwards. Any rough carpenter could make such a house, and, except when haulage is exceptionally expensive, the cost made at home should not exceed 35s. For use in the fields, a floor at a small additional cost may be provided, and the roof should either be felted or tarred. Perches should be movable, only 2ft. from the floor, and should run lengthways of the house instead of from front to back. If a few spadefuls of dry earth be thrown upon the floor after cleaning, and a little rough litter, straw, bean haulms, dry leaves or fern, be added, so much the better. Do not shut the birds in when rain comes, but do most certainly give them the chance of exercise in a weather-proof place. The extra cost is very little indeed, the added profit very great.



WHO'S WHO IN THE POULTRY WORLD.

MR. HARRY ABBOT.

AMONG the comparatively few all-round judges of poultry in this country there is none more popular and in greater request than Mr. Harry Abbot, the founder of the firm of Abbot Bros, and now its sole proprietor. Just how long it is since Mr. Abbot commenced his Fancy career does not matter; it is many years ago. The stock consisted of a pair of birds presented to him for "services rendered" to his tutor, the Rev. J. N. Williams, when as a lad he was living on his father's farm at Kirkby Lonsdale, the services consisting of attending to that veteran fancier's poultry during vacation. Since then he has bred and exhibited most varieties of poultry, not fowls alone, but ducks, geese, and turkeys; and at his farm at Thuxton, Norfolk, are to be seen pens of most of the popular breeds of to-day.

Poultry, however, is not the only live-stock reared by Messrs. Abbot Bros., since their fame as breeders of Hackney and Shire horses, Shorthorn cattle, White Yorkshire pigs, Wensleydale sheep, and different varieties of dogs has long been established. The farm, of which we published an illustrated account in our issue of last October, consists of over 100 acres, and is entirely meadow land. It will be

patent, therefore, that there is ample room for the poultry stock; and there is little doubt that it is one of the largest and most successful "plants" of its kind in this country. Among the breeds may be mentioned Spanish, Cochins, Brahmas, Leghorns, Plymouth Rocks, Orpingtons, Wyandottes, Minorcas, Indian Game, Andalusians, and Faverolles; Indian Game, Old English Game, Polish and Sebright bantams; Aylesbury, Indian Runner, Buff Orpington, and Crested ducks; Embden and Toulouse geese; and American Mammoth Bronze turkeys.

Of the numerous offices Mr. Abbot holds in the Fancy are vice-president of the Poultry Club and club judge of the Leghorn, Plymouth Rock, Buff Orpington, Water-fowl, and Turkey, and many other variety clubs. He is also on the Council of the Grand International Show and other societies, and is on the committee of several specialist clubs.



MR. HARRY ABBOT.

MR. G. A. PALMER. ::

POULTRY-KEEPING in the case of Mr. Palmer has been a development of the

general and practical agricultural training that he received in his earliest days. It is not surprising, therefore, to find that he still considers his strongest point to be an intimate knowledge of the conditions and requirements of all-round farm labour, or that while as a writer on poultry

topics he has contributed very largely to the agricultural Press, the other branches of agriculture have been in no way neglected in this connection. Mr. Palmer was born in 1856, the youngest of seven sons of a Leicestershire family, and, after serving an apprenticeship on a farm in that county, and having farmed some 400 acres for his father with conspicuous success, went into business on his own account.

On his establishment at Wykin, Hinckley, he breeds White and Black Leghorns, White Wyandottes, White and Buff Orpingtons, Buff Rocks, Houdans, Faverolles, Indian Runner Ducks, and Bronze Turkeys. A large part of his time, however, is taken up with lecturing, in which his gifts are well known. For the last fourteen years he has lectured for County Councils in Warwick, Leicester,



MR. GEORGE A. PALMER.

Worcester, Lincoln, Herts, Glasgow, Plymouth, London, indeed in most parts of the country. He has been connected with the Utility Poultry Club since the beginning, being on the Advisory Board of that body, and he is a specialist in poultry diseases. His con-

tributions to the ILLUSTRATED POULTRY RECORD stand in no need of eulogy at our hands, since they have been read and appreciated by thousands of our readers.

M. ACHILLE DE PERRE, AVOCAT.

TEN years' service in one position deserves recognition, and M. de Perre, who has occupied for that period the Secretariat of La Fédération Nationale des Sociétés d'Aviculture de Belgique, received



M. A. DE PERRE.

recently the tribute of his *confrères*, whose feelings were fitly expressed by the Chevalier Schellekens, supported by many of the leading Belgian poultry-breeders. At the same time a valuable piece of bronze, a veritable work of art, was presented on behalf of numerous subscribers.

M. de Perre was the founder and first President of the Poultry Society of the Canton of Uccle, and in 1900 became President of the Pigeon Club of Belgium. He was made joint secretary of the committee of the Société Nationale pour l'Amélioration de l'Aviculture from its formation in October, 1896, until it was transformed into the federation named above, and in October, 1898, he undertook the position of general secretary. On the promotion of the Fédération Internationale d'Aviculture at Liege in 1905 he became secretary, which position he still holds. Such a record of self-denying labours is worthy of all praise, and Chevalier Schellekens's eloquent words but expressed the feelings of all who know M. de Perre.



The Past Year.

It is customary at the beginning of a new year to give a brief review of the events of the past season, and to see how we in the Poultry Fancy have fared. It is hardly possible to write at any length of every detail, or even to mention those which we would like ; but a few stand out and may be dealt with. In another part of the present issue of the RECORD I have given my impressions of the breeds, gathered during my attendance at many shows and from correspondence with fanciers. Suffice it, then, to omit them from this brief review.

The Breeding Season.

As can be imagined, the breeding season is an important part of the fancier's year, since much of his future success depends on the number of chickens that he can hatch and bring to maturity for the big exhibitions of the season. Taking that of 1909 as a whole, it cannot be said to have been a favourable one for chickens. There may have been worse, which I greatly question; there have been many better. The winter birds, some of which showed decided signs of having "eaten their Christmas dinner," were satisfactory enough ; and there was ample proof of this, I think, at the early summer shows, at which classes are, somewhat foolishly, I consider, provided for fowls of the year. It was said in some quarters that more late autumn and early winter chickens would be hatched for the 1909 events on account of the Poultry Club "bone test" being in vogue ; but really it was not so. I never expected it would be, since those who make a point of getting chickens ready for the earliest shows each year are a select few whose ranks are not likely to be increased. The spring season, on the other hand, was not a propitious one last year. More than the usual number of eggs were infertile ; and in several cases whole broods of chickens which came into the world had but a brief existence. The later birds, however, those which were hatched at a time when, in the ordinary course of events, most fanciers

would have broken up their breeding-pens, came along well enough, although of necessity, in the heavy breeds, they were not sufficiently furnished to stand well at the early autumn events, as witness the entry and the display at the Dairy Show. Then, again, the breeding season of 1909 was more prolonged than usual ; and, in my opinion, it was largely due to this, keeping the birds in high condition for the production of eggs, that the moulting season among the adults was an erratic one.

The Shows.

Although there were numerous appeals for entries at the shows during the past season, and many had to advertise an extension of the date of closing, it will be found that the number of exhibitions held in 1909 was well up to the average of the past few years. There were, I admit, rather more cancelled classes than usual, and at events which rank well in the front. But some of them at least could doubtless have been prevented, had the shows been properly worked. One thing which struck me as the result of an erratic season was that more prizes than usual were withheld. It is all very well to withhold a prize for want of merit. No one can reasonably object to such a proceeding. But it is not a popular move to withhold a prize for short entries. It often means putting a good bird back, and in a measure spoiling its show record. By far the better plan is to award all the prizes if the exhibits merit them, but to halve the prize-money or return a reasonable proportion of the entry fees as prizes. Otherwise, it is much more satisfactory entirely to cancel classes with very short entries. This subject is one which should be definitely settled by the ruling body ere another show season comes round. The summer and 'tween-season shows of last year were not a very striking success, but it is just possible that such events are now recognised as the hunting-ground of the teamsters, and are therefore left severely alone by the small man. It has been pleasant to find, however, that the novice has been very well

encouraged to come to the front at many of the fanciers shows, and particularly at those held by the several specialist clubs.

The Breeds.

Although there has been somewhat of a depression in trade, and the prices of foodstuffs ruled high throughout 1909, it cannot be said that the breeds suffered. Several new breeds and varieties were brought out, and there was no sign of the craze for novelty abating when the year closed. The pity was, however, that the new breeds were put on the market while they were yet very much in the rough. Those who originated them were in too great a hurry to reap the harvest. I was glad to find an increased interest being taken in the older breeds of poultry. Some which were almost on the verge of extinction had a revival, maybe because the younger generation of fanciers became tired of trying to breed a winner in the new kinds. However, there was a revival in several, and it is hoped that the interest will be maintained during the present year. The ranks of fanciers are certainly increasing, and many poultry-keepers who were apt to look on their birds as good enough for utility purposes only have joined the Fancy, finding that it is possible and profitable to combine fancy with utility.

The Clubs.

Most of the specialist clubs did good work last year; and there was a greater tendency than ever to form separate clubs for each variety rather than for a breed. Many new clubs came into existence, and with few exceptions they continued to carry out the objects for which they were formed. The Bantam Fancy is following the lead of that for the large fowls, and the number of its clubs showed a steady increase in 1909. One of the most prominent, no doubt, was the United Wyandotte Bantam Club, but another was that for Rose-combs. There was not much doing in the water-fowl and turkey sections; at least, nothing beyond the usual. Both the Orpington and the Crested Clubs went ahead, but there were no signs of any new breeds of ducks being brought out. The Poultry Club, despite one or two errors it may have made, continued to increase its membership and maintain its authority. That it was more than ever a power for good will be readily admitted; and most fanciers will agree that it is well for the Poultry Fancy that such a club exists.

To Sum Up.

I have merely touched on one or two matters in the foregoing notes. That there are others that might have been dealt with, I admit. But the Fancy section is but one of the many embraced in the ILLUSTRATED POULTRY RECORD; hence the brevity. To sum up, it might be said that, after all, 1909 had its good points; but we want more of them this year! We want a better season for hatching the chickens; and since we are not all water-fowl fanciers, we really could do with a less amount of rain.

THE POULTRY FANCY IN 1909.

A REVIEW OF THE BREEDS.

By WILLIAM W. BROOMHEAD.

IN dealing with a subject such as the above, it strikes me that the best possible way of doing so is to treat of the breeds in alphabetical order, disregarding altogether their grouping from a popular or unpopular aspect, or according to the supposed countries of their origin. It cannot be said that the past year was an altogether favourable season; in fact, looking back at it now, and reckoning up the cost, it might with truth be chronicled as a bad one. The weather was against very successful rearing, except in the earliest months, although the turnout of 1909 chickens at the first summer shows was good enough to lead one to suppose that the contrary was the case. However, the number of chickens was curtailed in a very large degree; and I never remember such a season for half-grown birds and adults. Some of the former reached a stage at which they appeared to be feathering well, and then for no apparent reason they moulted; and many of them, especially the cockerels of the heavy breeds, moulted two or three times, and were not in fit condition for the show-pen until the back-end events. The same may be said of the adults: they were late in commencing to moult, and it is long since I have known them to hang in the moult as they did, not furnishing at all quickly after they had passed through the first stages.

It is pleasing to be able to report that, despite the altogether unfavourable season, the Fancy is by no means on the downward grade. The number of shows held during the past year was about up to the usual, some seven hundred or more at a rough estimate; and although there have been probably more appeals for help, more cries of short entries, than in the ordinary course of events, entries in the circumstances have not been so bad. Here and there prizes have been withheld "for want of merit" (although, of a truth, for want of support would have been much nearer the mark) at some of the supposed great shows of the season, which was certainly rather a pity. But it is significant that where one old-established exhibition has "thrown up the sponge" a new society has come into vogue, in some cases even two springing up to take the place of the old. It shows that there is plenty of life in the Fancy. The specialist clubs, too, as well as show committees, are awakening to the fact that the novice is a strong power in the land, and they have been catering for him in a better manner than hitherto. It is pleasing to find that novices have responded, although the line that separates the two classes of exhibitors has not yet been so clearly defined as it might be.

But, to turn to the breeds, Anconas went out of fashion some time since. It appeared to be a fine point whether they should be mottled, spangled, or ticked; and while the prominent breeders were arguing the matter, the lesser lights gave up in disgust, and either went out of

the Fancy or turned their attention to some other breed. However, the Ancona appears to be coming into its own once more, and although there have been bigger entries at the Club Show in the breed's palmy days than resulted at the 1909 event, there has been a nice sprinkling of the breed at exhibitions up and down the country. Novices are being encouraged, and the two classes at the Club Show, with forty entries between them, were good—indications that the Ancona is again coming to the front. The single-comb continues to be the favourite, but some really fine specimens of the newer rose-comb have been penned at three or four events, and there is a likelihood of that branch taking on.

The Andalusian Club, practically only recently formed, has done good work since it came into being, and I feel sure that it is responsible for the keener interest which is now being evinced in this grand old breed. True, there has been of late somewhat of a craze for blue-plumaged fowls; but the run has been on whole coloured blues rather than those which are laced, as is the characteristic of the Andalusian. It is still a difficult breed to get true to standard, blacks and even whites being among its "sports"; but during the past year there has been a decided improvement in the sharpness of the lacing, the soundness of black, and the clearness of the blue ground colour, while head points and type have not been neglected.

Of the Aseel not much can be said. It is a small fancy at best, and the breed still remains in the hands of a very few fanciers. Classes continue to be provided at two or three of the most important events of the year, but they are not always a success. At the Dairy they failed to fill, and were cancelled. A score of entries were made at the Crystal Palace, and in the four classes provided at the Birmingham Show the total entry was thirty; but if there are more than a dozen fanciers of the breed in this country they must keep their birds at home. There is not enough money in Aseel to make them very popular, albeit from a utility standpoint they are much higher than many people imagine. They are small birds, certainly, but they are practically all flesh, and they have most of it at the best parts and with very little offal. However, they are too big for the Bantam fancier and too small for the man who likes a large fowl, hence, maybe, their unpopularity.

Brahmas are among our oldest breeds, and, like most of the "ancient lights," it looked at one time as if they would become extinct. They have, perhaps, been for too long in the hands of a few fanciers, although the pity is that nowadays, when new varieties are for ever being introduced, very few fanciers spare a thought for such an old-fashioned breed. However, they have kept their end up, and now that the Brahma Club has come into line with other specialist clubs, and intends to encourage the novice, we may look for something approaching a boom in the breed at this season's shows. It is certainly an up-to-date move for the club to offer reliable breeding-pens to novices and beginners, and to provide classes for those who have never previously exhibited, at its next Club Show, with good prize-money and specials. It is to

be hoped that the result will be an increased interest in both the Light and the Dark varieties. One seldom sees a White or a Buff Brahma nowadays in this country, hence it can be taken for granted that they are almost extinct.

Campines are going ahead once more, and fanciers of this charming breed appear to be agreed that finely-barred saddle hackles in the male birds are much preferable to plain hackles resembling the neck feathering. The Silver is by far the more popular variety; in fact, the Gold has almost disappeared from the exhibition arena. There is room yet for improvement in the Campine, more especially, perhaps, in head points. But it cannot be gainsaid that the markings and colour and general stamp of those birds which were shown last year were much better than they have been.

Cochins! The cancelled classes at the Dairy Show made one almost feel that this breed had practically seen its last day. But there were some good displays of it at subsequent events, hence it may be said that it is pursuing the even tenor of its way. Nevertheless, it wants something to give it a boom again, to bring the breed once more into the front rank, since it is a charming one to cultivate. The Crève-Cœur is where it has been for so many years past—in the "any other variety" class! Perhaps a dozen specimens of the Black variety were seen at the exhibitions of 1909, but never a Blue nor a White; and I question if there are half a dozen fanciers in this country who cultivate it.

Dorkings showed signs of a revival towards the close of last year, perhaps on account of the fact that one very prominent fancier of the breed disposed of his entire stud. The novice, however, is being encouraged to take up the Dorking; hence it is reasonable to expect that it will once more loom in the front rank. The Dark and the Silver Grey varieties are the chief ones exhibited, and one seldom comes across a Cuckoo, a Red, or a White. Faverolles are perhaps better than they have ever been since English fanciers took them in hand. Classes provided for them last year met with a good response, and at the "classical" events of the past season there were some fine displays. The Salmon, or Faverolles-Saumon (the breed originated in France), still continues to be the only variety of it which flourishes in this country, and fanciers appear to have dropped the Black, a few specimens of which were exhibited two or three years since.

The Game breeds, both Modern and Old English, still retain their old positions. One looks for the best displays of the Modern at the Crystal Palace, Kendal, and Birmingham Shows, and at those three events last year there were the usual fanciers exhibiting, the Westmorland fixture being practically the Club Show. There are two clubs for Old English Game, and under their guidance the breed flourishes. Both Club Shows were held during the same days last year, the one at York and the other at Oxford. It was at the latter, that of the older club, that a thoroughly representative turnout of the old fighting Game was to be seen.

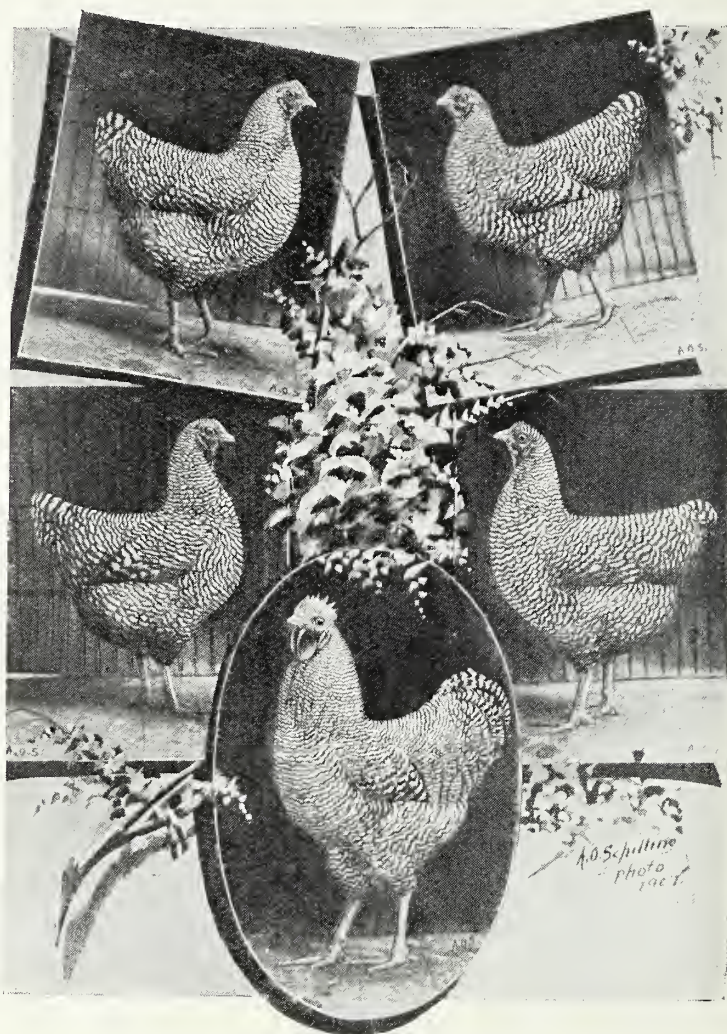
Hamburgs are not much more forward than they

have been for the past few years, maybe because they were perfected some time since, and the "old hands" can still retain their superiority. One rarely sees a new name in the Hamburgh ranks, especially in the North, and it is seldom indeed that a fancier is bold enough to attempt a new variety of the breed. I did once see a so-called Buff Barred, and a White or two; but they have become defunct so far as the show-pen is concerned, and the only varieties which are recognised as Hamburghs are the Black, the Pencilled (Gold as well as Silver), and the Spangled, this latter in two colours also. Houdans, again, have not made much advance. A few fanciers keep and exhibit them; and there were fairly good displays at the most important exhibitions of the past year. But they are chiefly met with in the "any other variety" classes, where they often secure the best award. Indian Game continue to be popular in one variety only. One generally looks to the Club Show for the appearance of "a dark horse" or two; and it was so in 1909. Birds which had been winning all along the line at the late summer and early autumn shows had to stand down to fresh faces which had been held back for the club event. By the way, the Jubilee (practically a White-laced Buff) has not been heard of recently, and neither have the Black, the Buff, and the White. The Indian Game Club and fanciers of this breed do not encourage new varieties!

A new club for La Bresse, formed towards the close of last season, and classes provided for the breed at the Crystal Palace Show may be the means of bringing this old French fowl into prominence over here. By the way, why have the English fanciers made red lobes a point? The lobes should be cream or white, the latter for preference. It is certainly a charming breed from a fancier's standpoint, and its utility qualities are said to be great, so it may take on, although, beyond the Faverolles, French breeds do not appear to have much vogue in Great Britain. La Flèche, which follows La Bresse in alphabetical sequence, is an example of this, and one might not unreasonably ask, What has become of this breed of recent years in England? I attended most of the important poultry shows of the past season, but I believe I did not see half a dozen La Flèche in either sex. The Lakenfelder, too, either of Belgian or German extraction, has become almost a "dead letter" at English shows; and here again there were not a dozen out at the exhibitions of 1909. The Lakenfelder, nevertheless, has had a very brief existence in this country compared with La Flèche, which had a good run many years ago when Continental breeds were first imported. La Bresse fanciers, however, should not lose heart at those failures, since the Poultry Fancy is much stronger nowadays; and, moreover, anything novel, such as La Bresse is, generally gets a good run.

Langshans still continue to have a select following. The Black remains by far the most popular of the three varieties of the so-called modern type, and whenever special classes have been put on for it the entries have

been in every way representative. If anything, those birds at the 1909 shows were taller and longer than I have seen them, and ere long I shall not be surprised to find them as reachy as Modern Game! The White and the Blue varieties do not make much headway. The latter has a club all to itself, while the White is fostered by the Langshan Society, which also looks after the interests of the Black. There is somewhat of a boom in blue-plumaged fowls just now, so maybe the Blue Langshan will benefit by it. The Croad Langshan is making many friends, and at the close of last season



TYPICAL AMERICAN BARRED ROCKS.

that particular fancy was in a very healthy condition. There is only one variety of this branch—namely, the Black—and I fear that any attempt at a new one would meet with great opposition. The Croad is said to be the original stamp and colour, and any variation is not allowed by the club.

Leghorns were never better, taken all round, than at the exhibitions of 1909. The White has "settled down" once more, most of the best specimens being Leghorns, and not half-bred Malays, as was the case a year or so since. The size of most varieties has increased, but this has been observed chiefly in Browns and Blacks during the past year, Buffs and Whites having been bred well up to the advanced size of two or three seasons ago.

New varieties have not been lacking. The Partridge has been attempted, but it has apparently been abandoned, which is not surprising—it too closely resembled a very coarsely-bred Brown. The Blue looks as if it has come to stay, for a while at least, and there has been a decided improvement in it during 1909. Rose-combed Leghorns have been exhibited in fair variety; but only one—viz, the Rose-combed Black—has so far been admitted to the Poultry Club standards, and that at the December meeting. It seems to have caught on, its close relation to the Black Wyandotte standing it, no doubt, in good stead. However, it is near enough to the general characteristics of the Leghorn fully to justify its name; and since the supporters of the Rose-combed Black are numerous, it looks as though the sub-variety will enjoy a good boom during this year. The Pile and the Duckwing remain in the hands of a few (what a great vogue the Pile did enjoy not many years since, especially in the London suburbs!), while Cuckoos crop up occasionally.

(To be concluded next month.)

THE BACK-YARD FANCIER.

By WILFRID H. G. EWART.

OF the various types and classes of men who interest themselves in the Poultry Fancy, none is more pleasant to meet at a show than the back-yard fancier. None is keener, and that is a valuable recommendation where so many are *blasé* in the pride of their knowledge and experience of shows in general. The back-yard fancier, as I judge him, is a simple and very enthusiastic

man, a trifle egotistical (because of his enthusiasm); over-inclined, perhaps, to criticise the judge's awards, but possessed of a good deal more practical knowledge than most of us—a man the Fancy should encourage.

To look into the ways and means and possibilities of poultry-keeping, the back-yard hobby is interesting as bringing to light that which is odd and uncommon-place in the life of the poor. But for us as fanciers it possesses, of course, a particular attraction—largely because the back-yard phase of poultry-keeping is imperfectly understood. In point of fact, I am very certain that the successful back-yard exhibitor makes more money out of his fowls, in proportion to the number he keeps, than does any other class of poultry-keeper. Naturally, the successful exhibitor is rare, and his success is usually the permanent result of long years' experience, unless it is the temporary result of a lucky sitting of eggs.

The average back-yard fancier is completely dominated by his better-favoured rivals. He knows he cannot beat them. He exhibits at his local show, and maybe at other local shows, but he seldom wins. His usual lot is reserve or V.H.C., and then once or twice a second or a third. Show reports often describe his birds as "moderate" or "of little account"; but show reporters do not, as a rule, appreciate the state of affairs. The back-yarder's birds seldom do him anything but the greatest credit, though to realise it one must inquire a little into his methods and conditions of work.

It is not hard to imagine the difficulties of chicken-rearing and of keeping fowls in show condition in the most restricted quarters. I suppose the main principle of the thing lies in vigorous weeding-



A BACK-YARD FANCIER'S COLUMBIAN WYANDOTTES.

[Copyright.]

out from year to year and unremitting attention to cleanliness. Every fowl kept makes a difference; therefore, directly a unit can be dispensed with it must be dispensed with. At the end of the brief breeding season the older and less valuable hens are disposed of and space given to the two or three broods of chickens. Then the question arises, How are chickens to be well grown and maintained in health under such conditions? The secret of that is exercise and sunlight, and if the latter is rare (in our back-yard) the former at least must be assured, and with a little ingenuity and work in spare hours it can be managed all right.

At one time when my own fowls were confined in a cramped earth run partitioned off a kitchen garden, I hit upon a very happy plan for the healthy accommodation of fifteen or sixteen chickens. I had a wood-shed in which the saw was plied daily, sawdust consequently being plentiful. The front was open, but there were sound roof, back, and sides, and this struck me as a pleasant, suitable spot for my young birds. I cleared the logs out, littered the floor with sawdust to the depth of about six inches, and placed a coop at each end of the shed. Along the front fine-mesh wire netting was fixed so that the chicks could not find their way to the outer world. But on fine, sunny days (it was early spring) I would carry the coops forth to a plot of turf in the lee of a wall, and there the little creatures would sport and grow almost visibly.

Various opinions are expressed as to which is the best breed for the back-yard fancier to cultivate; but I think one cannot do better than stick to the Black Minorca. I suppose more Black Minorcas are to be found in metropolitan suburbs (and in the metropolis itself) than on all the farms in the South of England. It cannot be denied that they fulfil all practical requirements. A good deal of theory is propounded with regard to the qualities of various breeds; but the strong points of the Black Minorca are as a rule accurately described. It is quite the case that this breed is "a layer of large, white-shelled eggs of excellent size, and a fair table-fowl." But I think the chief reason for the adaptability of the Minorca to back-yard conditions is that it is very active and yet very tame; so long as one does not overfeed it it keeps fit and, more especially, in show condition. A couple of exhibition pens should be put up under cover—in an outhouse, say—and the two or three promising specimens given short periods of training in these. The lobes and colour, of course, must be carefully kept, and it does no harm to a black fowl to be washed four or five days before a show. A white fowl should be washed about thirty-six hours only before it is to be judged; but black plumage requires a day or two in which to recover the sheen. If the cock or hen is kept in an exhibition pen between the washing and the show, it will come out all the finer after the final grooming.

The back-yard fancier is a poor man as a rule, and he cannot afford to pay many entrance fees, railway charges, and subscriptions to clubs. But he is a large and growing element in the Poultry Fancy—which fact should not be forgotten by the specialist clubs.

CLUB NOTES.

BUFF ORPINGTON CLUB JUDGES.

I am glad to see that the Buff Orpington Club has not adopted a proposition which was on its agenda for the annual meeting. This was: "That a judges' selection committee be appointed, consisting of five members, to be chosen by the committee, and that it be left entirely to them to select competent members of the Club to act as Club judges, and that the present list of Club judges be expunged." Was ever a more narrow proposition put into print! The Club had already been spoken of in Fancy circles as a decided clique; and I congratulate those members who attended the annual meeting for deciding "that the Club judges be elected annually at the general meeting," which has always been the case; but "that the list be sent out to members to vote for judges for the Dairy and Club Shows, and that no judge be appointed for more than one of the classical shows in any one year." When the Club states which shows it considers as "classical" (there are so many exhibitions nowadays that might run as such), and who is to control the election of the judges for other than the two mentioned, I will be ready to "throw up my cap." However, it has done well, and maybe I ask too much.

THE COMBINED CLUB SHOW.

I understand that in connection with the Specialist Club Show "the prize-money should not be less than 20s. first, 12s. 6d. second, and 6s. third, and if entries exceed twelve a class the show to add a fourth prize of 4s. Any club will be able to increase the above prize-money out of its own funds. The entrance fee to be a universal one of 4s. a pen." This is somewhat different from the particulars which I gave in last month's RECORD, and which, as I then said, were decidedly muddling. A workable plan has been arranged, and a definite statement made as to profit and loss. The first show is to be held in the North of England in the second week of December, 1910; and Liverpool and Sheffield have been named as likely places. The date will clash with one of the big and old-established Yorkshire events and will run closely on Birmingham.

W. W. B.

THE SHOWS.

THE dates of three summer exhibitions are already announced, and readers may like to make a note of them. They are the Royal Ulster Agricultural Show at Belfast, on May 18, 19, and 20; the Royal at Liverpool, from June 21 to 25; and the Wirral and Birkenhead at Bebington, on July 29 and 30 and August 1. Although the schedule for the "Royal" Show, which is generally issued early in the year, is not yet to hand, I believe poultry fanciers will find that their special section has been brought well up to date. In addition to the numerous classes for the popular breeds, I hear on good authority that there will be a fairly extensive classification for Bantams, with separate classes for the better-known varieties.

W. W. B.



Hatching for Stock.

Concurrently with the work of hatching table-chickens, serious attention must now be given in this department to the future requirements for the renewal of stock ; and to take full advantage of March as a favourable hatching month, an adequate number of sittings of eggs must be put down during February. This applies particularly to the heavy breeds, whose habit it is to mature more slowly than the lighter. In all arrangements for incubation for stock purposes a maximum production should generally be the aim, in order to secure a sufficient number of birds for a wide selection later on ; a superfluous number of excellent specimens at weeding-out time can usually be disposed of to those who only aim at a minimum now. Moreover, as the hatching for this purpose must continue through a succession of weeks, the care of the breeding stock demands constant attention for the maintenance of a suitable reproductive condition, any failure in this very important particular during the present and next month being practically fatal to results. The future of the March- and April-hatched birds depends in a great measure upon the February and March condition of the breeding stock, and any loss of condition at this season is more or less irretrievable.

Hatching Ducklings.

This most desirable hatching month for ducklings must of necessity depend, as regards actual results, upon the previous opportunities for commencing incubation ; but presuming these to have been in some measure satisfactory, the feeder's work is now becoming a matter of consideration. In the matter of accommodation the arrival of these birds at this season is less exacting than is the case with newly-hatched chickens, young ducklings doing well and thriving under conditions that would be quite unsuited to the requirements of the other birds. It is very astonishing to those whose experience has been confined to chickens to find how far a little brooding will go in the satisfying of ducklings' needs ; to see how many youngsters may be safely entrusted to the mothering care of one old hen ; and to discover that even such meagre brooding may be dispensed with at

the end of a week, ten days, or a fortnight. The novice will, however, very soon find out whether there are any defects in his breeding stock by the stamina of the ducklings and their measure of thrift in such an unpropitious rearing month as February. But even those that are hatched with every prospect of success will still fail or fall short of the breeder's purpose unless the feeding is suitable for the season and the end in view.

Feeding Ducklings.

Although by far the larger number of ducklings hatched in February are intended for marketing, this primary fact must not obscure stock requirements, and the further fact that this is the month during which the future layers and breeders should be hatched. We are, therefore, feeding for two purposes, for which birds from the same hatchings must be selected, and the treatment must consequently vary with the object. Provided the character of the food is suitable, some variety of food-stuffs is desirable, and the use (for example) of one part of sharps mixed with three parts of either boiled rice, barleymeal, or oatmeal allows some scope for change, the additional use of lean cooked meat or greaves being proportionate to the object and the current requirements. As a finishing diet for subsequent use in the case of ducklings intended for market, probably nothing is better (from about the fifth week of rearing) than the very commonly used mixture consisting of about three parts by bulk of well-cooked rice and one part of tallow greaves. The different treatment of the birds to be reserved for stock consists chiefly in the allowance of a wider range and access to swimming water, with the object of a more gradual building up of the frame and the maintenance of a sound constitution—the swimming exercise more especially preventing a too rapid growth and increasing stamina.

Early Goslings.

The altered position of the goose in modern poultry markets is such that the importance of hatching the goslings out as early as possible can scarcely be overestimated, and only those who have looked after their stock birds during the previous unproductive months can expect to be in a position to get some eggs during

February. If the production is to be a small one, it must be early in order to participate in the remunerative prices, and if it is to be more extended it must still have an early beginning so that the average of the season may attain the highest possible level. In either case, therefore, the present is an important period for the goose-breeder who looks for a profit on his produce, and the feeding of the old birds must be in accordance with their condition.

The Running Chickens.

These are always with us—more or less. That they are not present in greater numbers so early in the year is largely due to a not unnatural idea that the work of early rearing presents almost insuperable difficulties, whereas success depends largely upon the due application of experience. Unfortunately, however, the individual usually requires to learn by personal experience, partly because it is not very easy to do this work simply as the result of instruction, and also partly—sometimes mostly—because the novice looks upon the experienced

DUCK-BREEDING FOR FARMERS.

By J. W. HURST.

READERS will remember a very interesting account, of Mr. Peter Walsh's duck-farm at Fleetwood which appeared in the December, 1908, issue of this magazine, and that one of the features of that enterprise is the absence of breeding stock upon the farm, Mr. Walsh depending entirely upon others for his supply of some 60,000 or so eggs per annum. The present notes are the result of an attempt to discover something of the possibilities of duck-breeding, not by a specialist such as Mr. Walsh, but by an ordinary farmer, the production of ducklings being concurrent with the general work involved in stocking and cropping agricultural land according to the recognised rules of good husbandry.

When in the course of my quest I arrived at Otham Court Farm, Polegate, I concluded that I had found a very satisfactory example—and much sooner than I



THE MOST POPULAR BREED OF DUCK IN ENGLAND—THE AYLESBURY.

[Copyright.]

as old-fashioned and out of date. Those who have this year ventured for the first time, and are now in possession of some running chicks, will no doubt be confronted with the initial difficulty of keeping them growing at an unfavourable period for growth. Adequate progress depends largely upon the sufficiency of the meals and the regularity of feeding them.

had anticipated. Those who have visited Eastbourne will remember Polegate, and will at once recognise the very desirable situation of a poultry-producer who farms land within four or five miles of a centre of seasonable demand, with the addition of railway facilities as regards London. There are, therefore, just those marketing opportunities that are essential in the case of an

individual producer, who is working without any of the ideal advantages that belong to co-operative organisation.

Otham Court Farm comprises some 150 acres, which have been in the occupation of Mr. H. G. Cresswell since 1900. It had previously been considered, in the farmer's own words, as "a very poor farm," and history confirms the accuracy of this description. I have it upon the authority of Augustus J. C. Hare that an abbey of Premonstratensian Canons was founded at "Ottham Quarter" in the reign of Henry II., but that the soil with which they were endowed was so unprofitable that "they were starved out" and were removed in 1203. It is in part due to the fact that ducks are fattened amid the ancient remains of the buildings of the Order that

(fitted with hot-water tanks) capable of accommodating 500 birds. The ducklings are reared for two weeks in the brooder-house, being then allowed their liberty and access to swimming water. The ponds are large, and well sheltered by overhanging foliage. After four weeks of liberty the birds are yarded and shed-fattened for about two weeks, being killed at an average age of eight weeks.

This production is practically self-contained, last year's stock ducks numbering 80—all of from one to two years old; and the skim milk from 18 to 20 cows is all used in feeding on the premises. Mr. Cresswell pays particular attention to the renewal and maintenance of his breeding stock, always reserving for that use the best and most suitably hatched birds of his own pro-



A FATTENING-SHED AT OTHAM, AND ITS OCCUPANTS.

[Copyright.]

the present condition of the land is, as Mr. Cresswell tells me, "really good, due to poultry manure." It may be noted in passing that the present local representatives of the old religious Order are nowadays paying more attention to poultry-production than in the "starvation" days at Otham, but of that I hope some day to make another story.

Mr. Cresswell first gave his serious attention to poultry, as an important department of his farming, in 1903, with a first season's output of 1,100 ducklings and about 600 chickens. During 1909 his output was approximately 3,000 ducklings and 2,000 chickens. Contrary to the common local usage, artificial appliances are chiefly depended upon for this production, there being an incubator capacity of 560 and a brooder-house

duction, making a preliminary selection from the bulk at the age of six weeks just before the commencement of the fattening period. Owing to his method of allowing all the young birds to run free, and enter the water if they wish, the rearing up to that period is as suitable for one purpose as the other; and I am bound to admit that as regards the fattening birds the system in this case does not appear to involve any disadvantage, despite its departure from the stricter mode of confinement and no swimming water.

In addition to his energy as a duckling- and chicken-producer, carried on, be it remembered, as a part of the general farming of 150 acres, Mr. Cresswell has been keeping a stock of about 1,000 laying hens; but, in face of the prospects in this branch of production, he is

this year deliberately reducing his number by half in order to devote even more attention to the duckling output. It is his experience that the latter pay him even better than chicken-production, and he explains this by the statement that they can be reared with less expense



YARDED DUCKLINGS AT OTHAM.

[Copyright.]

and trouble in a brooder-house—and are more under control. To again quote his own words—"a duckling will not eat any more in eight weeks than a chicken does in eleven weeks, and, as a rule, makes more money if well turned out." Relative to a remark upon the quantity of straw used in the sheds, he admitted that ducks do require a lot in fattening, but emphasised the very valuable character of the manure—of which the farm provides such a striking and authentic object-lesson. A further by-product, the feathers, he estimates as worth an average of about three-halfpence per bird.

THE SELECTION OF A BREED.

By H. DE COURCY.

THIS is a matter of the utmost importance in successful poultry-keeping, just as it is in the breeding of any other farm stock, and an important factor in the failures which have from time to time occurred has been the selection of breeds not suited for the purposes which the poultry-keepers had in view. This is nothing more than a plain and absolutely reasonable proposition, the common sense of which ought to be perfectly apparent to all; yet how often do we find it ignored, with the most disastrous results? We have now a large number of breeds capable of satisfying the requirements of every

possible class of poultry-keeper, and to the long list of useful and popular, as well as beautiful, breeds new names are continually being added. There is no dearth of variety, and even the most fastidious amongst us can satisfy his taste when selecting a breed for either a practical or an ornamental purpose, or for both objects combined. The necessity for breeding with definite objects in view has indeed been a recognised principle amongst poultry-keepers, as amongst breeders of other kinds of stock, for a considerable number of years, and in the older works on poultry- and stock-breeding the leading chapters very often were devoted to the consideration of this most important subject. The selection of a breed is indeed one of the first questions which the prospective poultry-keeper must decide, because the preparation of premises, the erection of houses, the laying out of yards, &c., must depend to a very great extent upon the breeds which are to be kept and the purposes for which they are kept.

This principle of successful poultry-keeping seems to have been fully recognised by the United States Government when ten years ago it issued a bulletin to farmers through the Department of Agriculture, giving advice of a most practical nature, and of a kind which holds good, with but slight qualification, even up to the present day. Here is a brief quotation from the Government bulletin, containing sound advice in a most intelligible form: "A mistake is oftentimes made in selecting fowls of a breed that is not suited for the purpose for which they are to be kept. If egg-production is the all-important point it is a most serious mistake to select a breed of fowls that is not noted for this product. If, on the other hand, meat is the chief object, an expensive mistake will be made if any but the heavy-bodied fowls are chosen. The small, active, nervous, egg-producing breeds cannot compete with the larger phlegmatic Asiatics for meat-production. Then, too, if fowls are kept for both meat and eggs some breed of the middle classes should be chosen. These, while they may not attain the great size of the Asiatics, are sufficiently large to be reared profitably to supply the table with meat and at the same time have the tendency for egg-production developed sufficiently to produce a goodly number of eggs during the year. The Wyandottes and Plymouth Rocks are good illustrations of this class of fowls. While individuals of these breeds have made excellent records in egg-production the records of large numbers do not compare favourably with the egg-production of the Mediterranean fowls." This advice still holds good in the main principle involved, but may need some qualification, owing to the extraordinary progress which has been made within the past decade in the building up of great laying strains of the American breeds. As egg-producers they have, in fact, been raised to practically the same plane as the Mediterraneanans.

SOME FEEDING PROBLEMS.

II. THE CYCLE OF THE ELEMENTS.

TO arrive at a proper understanding of the effect of the various food constituents when taken into the animal body, it is essential to know something with regard to the building up of the fats, nitrogenous matter, and other compounds which make vegetable food, and further to inquire into the transformation that takes place when these are acted upon by the different juices secreted by the glands of the digestive tract. In subsequent articles we will discuss the effect of feeding these constituents, either alone or together, but before this can be explained it is necessary to deal briefly with what is termed the chemistry of foods.

One of the first laws learnt by a student of chemistry is that pertaining to the indestructibility of matter. Elements may undergo physical change; they may unite to form compounds, but under no condition is it possible to destroy substance in its elemental form. The elements, numbering upwards of seventy, may be liquid, solid, or gaseous, and when one or more are united their chemical properties and their form are changed. It is sometimes difficult to realise that two gases when compounded may form a liquid, or that a solid and a gas may form a liquid or a gas according to the elements employed, but this is none the less true. The first point we desire to indicate is that though matter may change its form, perhaps becoming invisible to the eye, it is still present and indestructible.

The more we inquire into the laws that govern the natural world, the more wonderful Nature becomes. We see how the waste material of one form of life becomes the food of another; how one form of life spends itself in building up complex compounds, and the very existence of another depends on the energy derived from the breaking-down of these compounds into more simple substances. It is true that Nature works in cycle form, though, once an element is compounded with others it may be centuries before it returns to its original state; but, on the other hand, the destruction or breaking-down of the compound may happen within a very short space of time.

We shall endeavour to describe, without the use of technical terms or by employing symbols, the changes that a number of the elements undergo after they are taken up by the growing plant, and, further, when fed to animals, showing how they are grouped together in the plant, and how they revert to simple form as an outcome of the processes to which they are subjected in the animal body. By doing this we shall make simple much that is to follow, and, moreover, we hope to give readers an interest in the question of feeding other than that purely of result.

The elementary substances required for plant life are eleven in number—namely, oxygen, hydrogen, nitrogen, carbon, potassium, calcium, magnesium, phosphorus, iron, chlorine, and sulphur—but these are not absorbed or taken up by the growing vegetable life in elemental form, but in simple compound form. For instance,

hydrogen and oxygen are obtained as water, carbon and oxygen as carbonic acid gas. The remainder are gathered also as compounds, with the exception of nitrogen, for a certain amount of this element in its free state, in the case of legumes (peas, clover, &c.), is fixed by a certain species of bacteria harboured by the roots. From such simple substances, then, is plant life built.

Water is of the utmost importance to plants, as can be ascertained from their analysis in a green state. As an example it may be mentioned that half-grown clover plants may contain as much as 92 per cent. of water. The requirement on the part of plants for water, however, cannot only be judged by this, for, in addition to the very large proportion of this compound that they possess, they exhale a large quantity through their leaves.

Next to water, in the amount utilised by plants, is carbonic acid gas. This gas is in the air, and comes as a waste product from animal life. The oxygen of the air inhaled by animals oxidises the carbon in the body, and is exhaled as carbonic acid gas. Reference has been made to the fact that Nature makes use of waste products as food for another form of life, and this is a striking illustration. If it were not for this provision on the part of Nature, in a very short while the available supply of oxygen in the air would be converted into carbonic acid gas, and thus the atmosphere would cease to possess its life-giving and life-sustaining principle. The amount of this gas in ordinary air is very small, there being only about three parts in every ten thousand, or, in other words, one pound of gas is contained in three thousand two hundred cubic yards of air. The air is absorbed by the leaves of the plant, the carbonic acid gas is abstracted, and the remainder is returned to the atmosphere.

The roots of plants are covered with minute root-hairs, and these take up water from the soil, together with nitrogen and other compounds in solution. The absorption is by diffusion, for these root-hairs possess no direct opening. The roots have also the power of dissolving certain solid substances from the soil particles with which they come in contact. Again, although plants take up some material that is of no use to them, they do appear to possess some power of selecting the matter absorbed.

We have so far indicated the foods necessary to plant life, and also the means by which it gathers its food. We now come to the larger question as to what changes these elementary substances go through after absorption. On referring to an analysis of any given vegetable substance it will be found that there are six groups of compounds contained therein. These are water, carbohydrates, fats, albuminoids (nitrogenous substances, referred to later as protein or proteid matter), fibre, and ash. It has already been stated that the water is taken up by diffusion through the walls of the minute root-hairs, and, further, that it forms the medium by which other foodstuffs are absorbed. Owing to the evaporation that takes place from the surface of the leaves, a constant stream of water rises in the plant, thus not only acting as the medium for the introduction of plant food

in the first place, but as the carrying agent for transferring the newly-manufactured compounds to the growing point, where they are required for the nourishment of existing cells and the formation of new materials.

The carbohydrates found in the plant are composed of three elements—namely, carbon, hydrogen, and oxygen—these being united in a given proportion. The hydrogen and the oxygen are derived from the water absorbed by the roots and the carbon from the carbonic acid gas separated from the air. It has been stated that this carbonic acid gas is a waste product from animal life, and that it is composed of carbon and oxygen, the oxygen having been obtained from the air. When the carbonic acid gas enters the plant it is broken down into elemental form, the carbon being united with the hydrogen and the oxygen of the water, the oxygen of the carbonic acid gas being returned to the atmosphere in its free state. It is in this way that Nature works—the carbon having fulfilled its purpose in the animal body, it is transferred by means of air oxygen to the plant. It is unnecessary for us to enter into the question as to how the various carbohydrates are formed individually, since all are composed of the three elements named, the only difference being in the proportions of the carbon on the one hand and the elements of water on the other, but we would point out the fact that the hydrogen and oxygen found in carbohydrates are always in the same proportion as found in water—namely, two parts by volume of hydrogen to one part of oxygen.

The fats are also composed of the same elements as the carbohydrates, but there is always considerably more carbon and hydrogen present in them than in the other group mentioned. This has a very important bearing on the question of feeding, since the fats and carbohydrates, by oxidation—*i.e.*, by the addition of oxygen as a destructive agent—are utilised in the animal body for the evolution of heat and energy, therefore the compound with the largest proportion of carbon and hydrogen must of necessity possess a higher fuel value.

When we come to the nitrogenous compounds we find that, in addition to the carbon, hydrogen, and oxygen, there are two other elements—namely, nitrogen and sulphur. These two last-mentioned are derived from the salts absorbed in solution by the root-hairs, and it is supposed that, concurrently with the breaking-down of the water and carbonic acid gas, as happens when carbohydrates and fats are formed, these salts are split into elemental form and the nitrogen and sulphur join with the hydrogen, oxygen, and carbon for the formation of the proteid compounds.

The fibre in a food is in reality composed of the walls of the cells, and is similar in composition to the carbohydrates; in fact, fibre or cellulose is a reverted starch, but it possesses one great difference, in that it is not acted upon by the same secretion when in the digestive system of the animal.

Ash, or that portion of the plant that remains after burning, consists of the various salts other than those employed in the direct preparation of the carbohydrates, fats, and nitrogenous substances that are taken up in

solution by the roots and deposited in the cells by the evaporation of the water. Salts may be described as the “stiffening” used to give the necessary strength to the growing plant.

During the growing stages of the plant's life these compounds are all utilised for the formation of new material, but at seed time they are poured into the seed itself to be used by the germ, after sowing, until it is able to gather food for itself.

We have not discussed the question as to how these wonderful changes take place, how from inorganic substances organic compounds are formed, as this is foreign to our purpose, but we may say that this transformation is brought about mainly by the living principle contained in the cells themselves and by the action of the sunlight; this latter is stored up in the compounds produced as latent energy, and later manifests itself when the compounds are broken down.

(To be continued.)

THE VALUE OF RYE AS A POULTRY FOOD.

By WILL BROWN.

AS far as I am aware, I have never heard of any poultry-keeper in this country using rye as a poultry feed, and as I believe it possesses many advantages the following particulars with reference to this crop may prove of interest. I have frequently heard of rye-meal being used by the peasants in Belgium and in other countries on the Continent, and having heard such good reports about it I have gathered some information on the subject, and to illustrate its use have prepared a table comparing it with other feeding-stuffs. I would point out, however, that rye should be employed only as a meal, because the belief is common that if fed to poultry in its whole state it produces ill-effects. In working out the table of values I have calculated from the analysis of the digestible constituents, and not from the total organic matter present in the food. This is the only way in which definite particulars can be obtained, since it is that portion of the food which is digestible that is of use to the birds when taken into the digestive tract. Two other points I would mention—namely, that the prices of foods vary very considerably; therefore I have taken what I believe to be a fair price in all cases. If the market price falls or rises, a small sum in the rule of three will alter the figures given and bring them into proportion; again it can be taken for granted that the poorer the quality of the feeding material, the smaller will be the percentage of digestible matter in the whole.

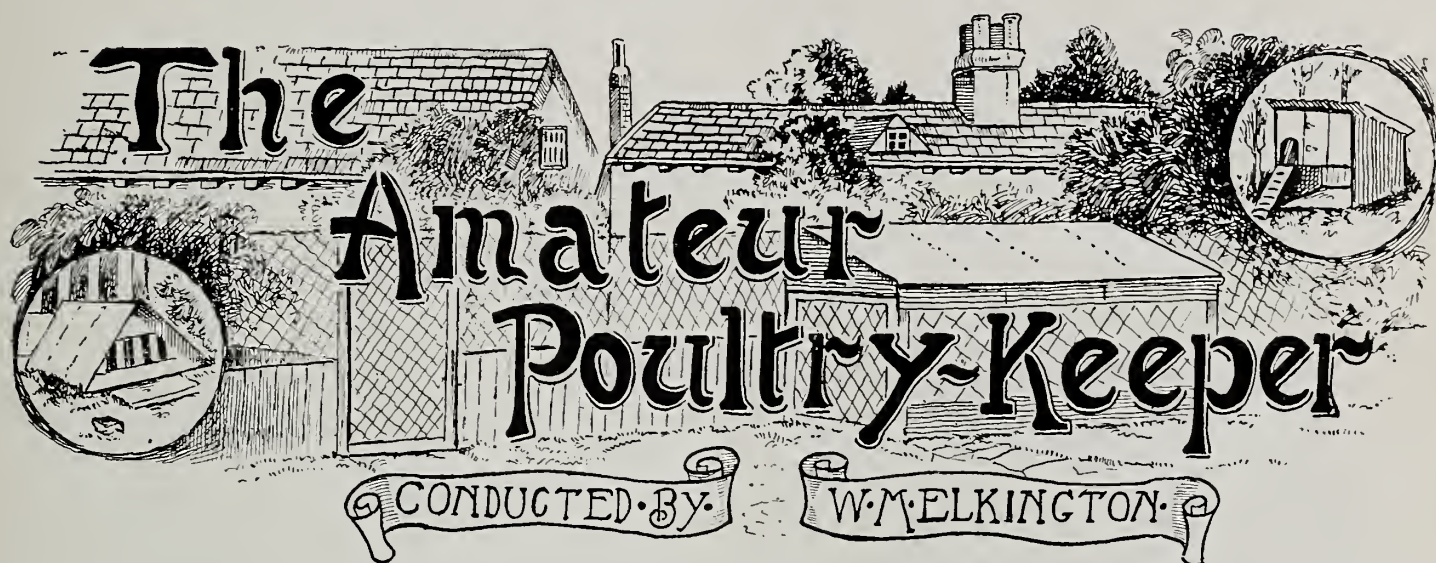
The analysis of rye shows that 76.9 per cent. of the whole is digestible organic matter, composed of nitrogenous compounds, fats, and carbohydrates. The present price of rye meal is about 28s. for 480lb. From the figures given respecting the percentage of digestible matter present, of this 480lb. 370lb. will be digestible, therefore the cost works out at 28s. for 370lb., or 8s. 6d. per cwt.

COMPARATIVE FEEDING VALUE OF DIFFERENT FOODS.

	lb.	lb.	per cwt.
Rye	28s. for 480,	or 370	digestible matter, or 8s. 6d.
Maize	30s. .. 480,	.. 341 9s. 10d.
Barley	28s. .. 448,	.. 296 10s. 7d.
Peas	36s. .. 504,	.. 362 11s. 2d.
Wheat	40s. .. 496,	.. 383 11s. 8d.
Bran	7s. .. 112,	.. 64 12s. 3d.
Oats	22s. .. 352,	.. 195 12s. 8d.
Toppings	10s. .. 112,	.. 84 13s. 4d.
Buckwheat	32s. .. 480,	.. 250 14s. 4d.

If the price of any food varies, given that the quantity remains constant, multiply the price per cwt. of digestible matter by the new cost and divide by the original price thus :

If wheat drops to 36s. for 496lb., the cost per cwt. of digestible material is 11s. 8d., therefore multiply 11s. 8d. by 36s., which equals 420s., and divide by the original price—namely, 40s. This gives a cost of 10s. 6d. per cwt. of digestible matter.



Home Produce for Householders.

Many people believe that if ever we are to do without foreign eggs, and keep the several million pounds that go to foreign countries every year, it will be through the efforts of British amateurs and householders rather than British poultry-farmers. Personally, I do not think we shall ever be able to dispense entirely with the foreign producer, and I am not sure that it would be a good thing for us if we did; but certainly there is room for thousands more householders in town and country to keep their own fowls, and every year brings many recruits to the ranks of those who are already doing this successfully. Unfortunately, it does not follow that everyone who takes up the work will meet with success, for lack of knowledge in some cases and carelessness in others frequently leads to disappointment. But it must be admitted that there are quite enough successes to convince unbelievers that it does really pay to keep a few fowls to supply one's own household. And there can be no doubt that when reasonable precautions are taken it will be found that it pays well to keep a few fowls to supply the home, though more extensive operations might not prove so satisfactory in proportion. Nor is it only the poor man and the cottager who will find this plan a source of satisfaction. Despite the great advance made in poultry-keeping during recent years, householders in many country districts, and even in towns, find it a difficult matter to obtain reliable supplies when they require them, and for that reason a well-equipped poultry-yard is nowadays an essential part of the country house establishment.

Simple Rules for Busy People.

In towns, too, the practice of keeping a few fowls is becoming more and more general as people come to realise the advantages of it. About a year ago I induced a neighbour of mine to keep some fowls in a fenced-off corner of his garden by giving him a small pen of pullets. At the time he was somewhat alarmed at the prospect of having to attend to the birds, believing, as many others do, that they would require expert attention and elaborate arrangements for their comfort. As my friend was quite a novice, I drew up a few simple rules for his guidance, and as he found them useful I may as well reproduce them here for the benefit of others. His accommodation consisted of a small house with a covered run measuring 8ft. by 5ft. and a few square yards of garden run. The floor of the house was covered with red sand, and the covered run was littered with dead leaves as long as they were available, and afterwards with straw, chaff, or any litter obtainable. The instructions for feeding and general management were as follows: Have all available scraps of bread, vegetables, &c., soaked overnight, warm them up in the morning, and mix with some meal to make a dry, crumbling mass. Give this to the fowls as early as possible, and at the same time rake up droppings in the house, and see that the water-pan and grit-box are filled. At midday give cabbage leaves and stalks, a few grains of corn scattered among the litter, and meat when available. In the evening give corn scattered among the litter. The instructions were made as brief and as simple as possible, and I have reason to know they have produced very satisfactory results.

Advice to Amateur Carpenters.

A person who is handy with tools can do many little jobs about the poultry-yard, but I question very much whether he will find it economical to build his own houses. Scratching-sheds, shelters, and such contrivances that are not readily bought from manufacturers may profitably be built at home, but labour-saving appliances and wholesale purchases of timber nowadays give tradesmen such a big advantage that they can sell houses for less than the average amateur can make them. Another reason why bought houses are preferable is because they are usually made to better designs from the hygienic point of view. I saw a house the other day that had been built by an amateur, and the only source of ventilation was the keyhole. The builder thought this was good enough for the winter, and he intended to bore a few holes for the summer! If any of my readers are thinking of building themselves a poultry-house, let them take warning from this. Fresh air will not hurt poultry, but foul air will, and it is quite a mistaken idea to suppose that by shutting the birds up in a hermetically sealed house they may be induced to lay more eggs in winter. If you put your head into one of these stuffy houses in the morning you will find it quite warm after the fowls have been in it all night, and you may be able to realise the effect of turning the birds out into the cold morning air. All my houses are fitted with sliding shutters in the front, and unless the weather is very bad the shutters are dropped six or eight inches all through the winter, and I can assure you that whereas a hen kept in such a house will be lively and active on the coldest day, a bird that has been sleeping in a closed-up roosting place will stand huddled in a corner.

Natural or Artificial Incubation.

Amateurs frequently ask whether artificial incubation is better than the natural method or *vice versa*, and the question is usually rounded off by an inquiry as to whether they ought to buy an incubator. I know there are many persons who prefer incubators to hens, but the fact remains that, given a good hen, the natural method stands unrivalled for reliability and simplicity. Incubators are especially valuable where early chickens are hatched and where large numbers of eggs are set, for it is obvious that in such cases there would not only be great difficulty in obtaining sufficient broody hens, but a great deal of extra labour would be entailed. But for the amateur who hatches no more than a few dozen chickens every year there is nothing to be gained by using an incubator. Moreover, the cost would not be justified by the amount of work it would have to do, whilst it must also be remembered that if you use an incubator you must have a brooder, or else make arrangements for hens to take to the chickens as they come out, in which case the hens might just as well have hatched them. Moreover, an amateur is more likely to get good hatches from hens than from an incubator, and on the whole I think he will be well advised to leave artificial methods to more extensive operators.

POULTRY IN COMBINATION WITH HORTICULTURE.

By G. A. PALMER.

FOWLS have the reputation of being extremely bad gardeners. Without going so far as the author of the paper read before the second Poultry Conference held at Reading College—who, in “keeping fowls permanently on arable land,” advised allowing them free run in a kitchen garden, adapting the crops to suit them—still, poultry-keeping on garden soil when the land is a light loam has been proved to be a success. The poultry and the crops should, however, have alternate chances. I find trouble enough through occasional fowls getting into the garden. It is not generally known that cold air-slaked lime may be sprinkled freely upon plant leaves without doing any damage, and that this to a great extent prevents the ravages of fowls and also of sparrows and rabbits. I have used it constantly on peas just through the ground; on cabbage plants to keep off the fly, and again on the leaves after transplanting; on celery to ward off the celery fly; on turnips and swedes and on the under-side of vegetable marrows to kill the green fly. No one without a trial could believe how often and how thickly it can be applied without injury to the crops.

The very worst way of keeping fowls is on a small, open, ash-covered run. No combination will give off a viler smell than wet coal-ash and poultry manure. In the suburbs of towns and in mining districts, where rows of cottages have only a piece of garden at the back, this is the method usually adopted. On a cold clay soil the covered-shed system is best, for birds must have dry feet if they are to lay in winter. On light soils a more economical plan is to give all the space possible on garden soil. Suppose the available plot to be twenty yards square. This can be divided into four runs with a poultry-house fixed in the centre, having a trap-hole from each corner, so that the fowls can be let out into any run desired. A permanent path from the outer gate to the poultry-house may be made, and then a narrow path all round the house, which can be dug up with the rest in turn. The partitions can be run up very cheaply if not required to fence against larger stock. One friend of mine is running many hundreds of fowls on arable land by means of tiler's lath and 4ft. wire. The cost of these is 1s. per 5 yards, so the 120 yards for the plot in question would be 24s.; but allowing that a cottager would not buy so cheaply, say 30s. The house, if well made at home, would cost another 30s., and thus a plant for twenty-five birds could be erected for £3. The advantages are many. There is no other way in which 300 fowls can be kept to the acre permanently and remain healthy and productive. The garden is sufficiently manured and kept in a high state of fertility by the droppings from the fowls, which again help by destroying plant parasites, such as wire-worm. It is found in practice that the birds occupy three out of the four runs in a year, or an average of four months on each.

If it is considered desirable, the plot can be forked over from time to time whilst the birds are in. It is by no means labour wasted, as it all helps in aerating the soil and leads to improved conditions of cultivation, whilst it helps the fowls by giving them more inducement to scratch and take exercise. This, however, is not strictly necessary, and birds seem to do very well without it. A forkful of rough litter thrown down will serve to feed the grain in so as to give the fowls scratching exercise, and if it gets wet sometimes it soon dries again. I have carried out this plan for breeding-pens of birds through the winter and spring, and always found the eggs very fertile—a sure sign that the conditions are good. After

part could be sown with vetches and rye, which would be excellent green food for the birds if not required for anything else. No. 3 plot might have mangolds and swedes in addition to the potatoes; indeed, the half might well be utilised to grow green food and roots for the fowls. As soon as No. 3 was cleared the fowls could be let into that, and No. 4 would be vacant in time for the long spring and summer occupation. Twenty-five laying hens so managed would produce 3,700 eggs a year, or £15 worth. If £6 was allowed for food and £1 a year for losses and depreciation on hens, there would remain £8 profit. If this were carried out on an acre, or twelve times as much land, nearly £100 could



[Copyright.]

A STRIKING EXAMPLE OF POULTRY-KEEPING AND HORTICULTURE COMBINED.

the breeding-birds were removed about the middle of May there was ample time to grow excellent crops of potatoes, cauliflowers, and brussels sprouts, all of which would come off in time for the next season's mating. When the poultry-runs form nearly the whole of a cottager's garden a rotation of crops will be necessary. Something like this: Suppose the fowls are in No. 1 plot; No. 2 is planted with crops that will come off in August, such as peas, early potatoes, onions, &c. No. 3 can be planted with main crop potatoes. No. 4 might have celery, parsnips, and winter greens. As soon as No. 2 plot is cleared the birds can be run through into that, and No. 1 can be cultivated and planted with cabbages to come in the next May, or

be made in the year. A man could easily cultivate an acre and attend to the fowls, and the sale of surplus garden produce would probably amount to £20 a year.

This is no dream of fancy figures. Such things have actually been done. In Lincolnshire, when I lectured there, one of my pupils, a man working at the ironstone quarries near Scunthorpe, attained an average of 200 eggs from 60 White Leghorn - Buff Orpington cross hens under these conditions. I have allowed 150. At another village I helped a man to start. He was then working on the roads. Two years afterwards I visited him again, and found that he had given up his road work and was putting in his whole time with his fowls (White Leghorns chiefly) and his garden, and, as he

told me, earning far more money. The tendency of legislation, rightly or wrongly, is in the direction of "petite culture." Small holders will never live by competing with large farmers in the production of corn and meat, but by the closer attention to minor industries which the large farmer cannot give they may be able to live in modest comfort.

THE AMATEUR'S GUIDE FOR FEBRUARY.

LAST month we discussed the arrangements for making the early chickens comfortable, which discussion was intended for the benefit of those who hatch in the wintry month of January. We have to remember, however, that there are a great many more who never turn their thoughts to the subject of hatching until February is in, so that for their benefit we will go back a little and consider the question of hatching, and especially the natural method, in which most amateurs are interested.

First of all, what of accommodation? Sitting hens must be kept quiet, so it will never do to leave them on what we may call the public nests, where they will be disturbed by every hen that wants to lay. Special nests should be made in an outhouse or building that is not much frequented, and for these nests we use orange boxes, which may be bought from a greengrocer for a few pence. They are already divided into three compartments of suitable size, and it is only necessary to nail a strip along the bottom and fix on a hanging-door with a pair of leather hinges to provide a first-class sitting-box.

It is a good plan to give the box a coat of Penetras or some other preparation of creosote, after which it is advisable to put a shovelful of loose soil in each box, scoop it out to the form of a nest, and line it with plenty of soft hay. When you get a broody hen, put her on to one of these nests with a couple of nest eggs and shut her in. As a rule they settle down at once if they mean business, and if they are not quiet and contented after a couple of days it is obvious that they are not to be trusted. At any rate, do not put eggs under a hen until she is sitting hard, and then regulate the number according to her size. Thirteen is the favourite number for a medium-sized bird, and it should not be exceeded, at any rate at this time of year. Select eggs of nice size and regular shape, and leave out freaks of any kind.

It is not necessary to feed a sitting hen more than once a day, and apparently it is quite an easy matter to take her off and put her on again. But this is where method scores, for, as in most things, there are right ways and wrong ways. First of all, always try to get a hen to sit with her head facing the front of the nest. Then when you go to take her off it is quite easy to put the hands under her wings and legs and lift her off without dragging any eggs out. Put her in a pen or coop to

feed, and let her have a good handful of maize, some grit and green-food, and plenty of water. If she stays off ten minutes at the beginning and about a quarter of an hour towards the end of the hatch, she will have ample time to eat all she wants and make herself comfortable. But if you want to avoid fouled nests, do not be in a hurry to put her back.

It is better to let a hen step back into her nest than to lift her on, because in the latter case it is difficult to avoid struggling, and that is how eggs are broken. When she is on and settled down it is advisable to see if she is quite comfortable. Some hens cannot be trusted to cover all their eggs, and will sit with one or both legs in the middle of the nest. See that the legs are well spread, and that all the eggs are tucked under the wings. Patience and quiet handling are necessary. To frighten a hen by rough handling is to spoil everything, and if a bird is uneasy and wild it is better to get another to take her place without any delay, for sooner or later she is pretty certain to deceive you.

Eggs may be tested by holding them before a candle at any time after the eighth day. Those that are quite clear may be taken out, to be boiled up for the chickens. The eggs containing live chickens will be opaque but for an air chamber at the large end, with a clearly defined dividing line.

Continue the daily routine until the twentieth day, and then if any eggs are hatching do not remove the hen until all are off. Take care that none are crushed at this critical time, and remove the empty shells two or three times during the day.

A USE FOR OLD HENS.

MOST people are tempted to keep hens after they have passed the most useful period of their lives, but in some cases this is done for a purpose, and the time is at hand when many of these old stagers will be serving a useful purpose, and realising, perhaps, three or four times as much as they would have done if sold for table purposes a few months ago. A country amateur told us recently that he always kept his hens (Buff Orpingtons) till the end of their second laying season, and then he had been in the habit of selling them off before they moulted, realising 1s. 6d. or 1s. 9d. each. For the last two seasons, however, having plenty of accommodation, he has kept on all that have moulted in reasonably good time, brought them on to lay early, allowed them to produce a batch of winter eggs, and then sold them off as broody hens, sometimes realising 6s. each, and never less than 4s. 6d. We made this gentleman's acquaintance by buying some broodies from him last year, and he has been good enough to tell us that, allowing for the cost of keeping the hens through the autumn, he estimates he saves about 2s. 6d. per bird. This is a considerable item, and the hint should be useful to amateurs who have any old hens to dispose of at this time of the year. The earlier they sit, the higher the value.



Eastern Bengal and Assam.

Practical poultry-breeding is evidently moving in the East, as we have shown from time to time in these columns. The *Englishman*, of Calcutta, says :

Apparently the Government of Eastern Bengal and Assam see great possibilities in poultry-breeding, for it specially deputed Babu Ambica Charan Datta to inquire and report upon the possibilities of developing this (poultry) industry. Mr. Datta's report shows that throughout the whole Province almost all Mahomedan families rear a few fowls, mostly for home consumption ; but also, in the case of the poorer classes, for sale when they have any birds to spare. There are two important centres for this trade—namely, Chittagong and Noakhali, whence a large export trade is done with Burma. Last year ducks, fowls, and eggs (chiefly ducks' eggs) to the value of four lakhs of rupees (26,666) were exported to Burma from Chittagong.

Turkeys from Canada.

It is strange that shippers are often careless in respect to matters which concern their own interests. In his annual report presented to the Minister of Agriculture Mr. A. W. Grindley, Chief Inspector for the Canadian Government at Liverpool, states :

I am sorry to have to report that the quality has also fallen off, and that this season Canadian turkeys were shipped forward in the same slipshod manner as was found ten or twelve years ago, birds in full feather and all weights and grades being packed together. Four or five years ago shipments of turkeys gave better satisfaction than they do to-day.

South Australia.

The twenty-first Annual Congress of the Agricultural Bureau of South Australia was held in Adelaide recently at which the Minister of Agriculture (the Hon. E. H. Coombe, M.P.), in his opening remarks, paid a very high tribute to the work of Mr. D. F. Laurie and Major Norton, in connection with poultry-production in the Colony and sale of eggs in Britain respectively. Papers were read at the Congress by Mr. T. B. Brooks on 'How to Increase Egg-Production,' and by Major Norton, D.S.O., on "The Export of Eggs."

Mr. A. G. Gilbert's Annual Report.

In his yearly summary of work, which is interesting and valuable reading, Mr. A. G. Gilbert, Poultry Manager at the Ottawa Experimental Farm, mentions the visits paid there by Mr. A. M. Prain, Miss Edwards, and Mr. Will Brown. This veteran poultryman always accords a warm welcome to visitors from the Old Country.

Major Norton's Lectures.

Since the Commercial Agent for South Australia has returned to the Colony he has been engaged in delivering a series of lectures on the marketing of produce in England and on the Continent. The enterprise of the South Australian Government in this direction is most commendable. Major Norton knows what is wanted on the markets and how the goods must be prepared. He therefore can influence producers to meet these conditions as no one else can.

A Huge Canadian Poultry Farm.

Reference has been made from time to time as to poultry developments in British Columbia, where the demand for eggs and chickens is vastly in excess of the supply, and large quantities have to be obtained from the Eastern Provinces and from California. Climate and conditions are equally in favour of successful poultry-keeping, and it is scarcely surprising that attempts are being made to deal with the industry on an extensive scale, as is the American way. In this connection we must not forget that the Colony is thinly populated, and thus production by a large number of farmers, as in Europe, is not possible. Hence methods have to be adapted to the conditions. The *Vancouver World* tells of the Pioneer Poultry Ranch, which is being rapidly pushed forward on the banks of the South Thompson River, four miles from Kamloops. The following is a description of what is intended :

Two partly improved ranches, having an area of some 360 acres, were purchased by the promoters. An army of workmen were thrown on, and have ever

since been actively engaged transforming these empty ranches of a short time ago into a living reality. A pumping plant, delivering to every corner of the ranch 15,000 gallons of water per hour from the South Thompson River, has been installed. An incubator house, having a capacity of 5,000 eggs, is now working, designed with every modern contrivance to ensure fresh air, an even temperature, and no vibration, equipped with incubators all of the latest model, and all arrangements made to add a monster 5,000 egg continuous hot-water heated incubator at the earliest possible moment. Breeding-pens and runs of all descriptions, each with the latest types of buildings to meet the special requirements of each case, have sprung up like mushrooms. Stable, cow, and pig barns of the most modern type and artistic style, and a factory for the manufacture of the necessary packing-boxes and appliances are now erected. A double, hot-water heated brooder-house to accommodate 2,000 to 3,000 chicks is well in hand, and also another for 2,000 ducklings, while three winter laying-sheds, each 250ft. in length and heated, accommodating from 2,000 to 3,000 hens, will shortly be completed.

In short, this most up-to-date of plants nearing completion is designed with the object of handling some 100,000 chickens, 10,000 ducklings, and 5,000 turkeys every year under the healthiest of conditions and at a minimum cost of production. So that the plant may be thoroughly complete, large fattening, dressing, and packing sheds will be erected before the Fall, as the owners lay the greatest importance on turning out their final product to the consumer in the very pink of condition as regards quality, shape, and packing.

POULTRY-KEEPING IN CANADA.

By WILL BROWN.

THE Dominion of Canada has three great industries—namely, lumbering, mining, and agriculture—and the resources of that vast country are fabulous. The area is so large and the population so small that many decades must pass before the whole of the resources are tapped. It is almost impossible for those who have not visited Canada to realise the enormous size of the land, for figures alone convey but little.

The Dominion may be divided into three sections. The eastern part, which has been settled for hundreds of years, contains the larger manufacturing cities, but at the same time there are vast areas which are open to the settler, notably in the Provinces of Quebec and Ontario; the Prairie Provinces, with Winnipeg on their eastern frontier, made up of Manitoba, Saskatchewan, and Alberta, cover the largest area. This huge plain is 900 miles in length, extending to the Rockies, and the sections which have already been opened up give an enormous wheat field some 300 miles in width. This, however, does not take in the whole, for there are large tracts of cultivatable territory to the north, the total area of which has yet to be ascertained. It may be taken, though, that the total acreage of the wheat land is in the neighbourhood of 350,000,000 acres. Beyond the "great lone land," as the North-West is called, lies the third division—namely, British Columbia. This Province is mountainous, and stretches from the Rocky Mountains to the Pacific Coast.

As agriculture forms one of the three great industries

of the country it is certain that poultry-keeping will play a very important part as the most profitable of the many minor branches of agriculture, and I believe that there are wonderful opportunities for those who undertake the production of poultry products. True, as yet the population is small; in fact, there are just as many people in Canada to-day as there are in London, but even so the demand is great and the supply is not keeping pace with the consumption—British Columbia annually imports eggs and fowls from the State of California alone to the extent of £100,000.

Canada is a land of possibilities, and to those who have a liking for the unconventional Colonial life, and who are contemplating settling in the country, will come the reward. Speaking broadly, for space will not permit my entering into detail, I may say that it would in our opinion be unwise for anyone at present to go in mainly for poultry-keeping on the Prairies. The most suitable Provinces are those of Quebec, Ontario, and British Columbia. The two first-named have the advantage of being near the more thickly populated districts, and, further, have greater opportunities for reaching the eastern seaboard with their produce for exportation to Great Britain. Prices rule high, the demand is good, and the climatic conditions, although severe in winter, are quite in keeping with successful poultry culture. My impression, however, is that the most suitable section of the country for this work is British Columbia. The climate is specially congenial, the demand for eggs and poultry in Vancouver, Victoria, and New Westminster is great, and, more important still, the demand for eggs in the lumber and mining camps, which are dotted all over the Province, is enormous.

The British Columbian Government is using every possible means to encourage the growth of the industry, and to this end a lecturer has been appointed this past summer to give expert advice on the subject. The land of the "large red apple," as Southern British Columbia is called, offers special opportunities for poultry-keepers, as does also that section of the Province that is adjacent to the Pacific and Vancouver Island. In the fruit growing districts, such as the Okanagan and Kooteney Valleys, poultry-keeping is considered a profitable industry, for, the fruit-trees not coming into profit for some six or seven years after planting, the ranchers require some other crop off their land to keep them going until their tree crops are marketable. Utility poultry-keeping has been found a paying business over this time of waiting. With regard to the area on the Pacific Slope, I maintain that this will in the future be one of the largest producing centres on the whole of the American Continent, for the climate is almost ideal, the available land cheap and plentiful, and the transportation facilities offered by the Canadian Pacific Railway, whose lines extend from the Atlantic to the Pacific, with branches everywhere, are excellent. To anyone thinking of settling in the Dominion of Canada my advice would be either to stay in Ontario or Quebec, or, better still, strike right out for the Province of British Columbia.



American Poultry Association.

The new Secretary-Treasurer was installed in office at the annual meetings at Niagara Falls. He is Mr. S. T. Campbell, of Mansfield, Ohio.

Retirement of Mr. James Rankin.

The pioneer of duck farming on a large scale in the United States, Mr. James Rankin, of South Easton, Mass., has felt that the fulness of years compels lessened activities, and he has sold out his plant to Mr. F. S. Keith, who has been in this business for nearly twenty years. Mr. Rankin led the way along which many have trodden, and has rendered great and many services to the poultry industry at large.

American Breeders' Association.

The Council of the American Breeders' Association has elected Mr. Edward Brown, F.L.S., a member of the Committee on Breeding Poultry, of which Professor J. E. Rice is chairman.

A "Royal" Poultry Society.

One of the later acts of the late King of the Belgians was to confer upon La Société des Aviculteurs Belges the title of Royal Society, upon which we beg to congratulate poultry-breeders generally and the members in particular. This active body was founded in 1890, and has done much to foster interest in pure-bred poultry.

High-Priced Eggs in the States.

Eggs appear to be dearer than ever in all countries. The *American Poultry Advocate* says: "There has been even more than the usual amount of complaint this past summer of the poor quality of eggs arriving in the New York and Boston markets from the West, and an evident result of this poor quality is an increasing demand for the better grade of eggs, with a consequent bettering of prices for such. It is evident that producers of "nearby" eggs are destined to receive a high price for their goods this coming Fall and winter, and it is their own fault if they do not make good money. Eggs sold

in September at 1s. 7d. to 1s. 8d. per dozen, and 75 cents to 80 cents (3s. 1½d. to 3s. 4d.) is expected to be realised in the winter.

AMERICAN NOTES.

(FROM OUR OWN CORRESPONDENT.)

800,000,000 Dollars' Worth of Poultry and Eggs.

THE prices which have ruled on eggs and poultry in the United States the past few years are such as greatly to encourage the farmer in increasing his poultry holdings, and the quality as well as the quantity thereof. It is stated that the forthcoming report of the Secretary of Agriculture will give the value of the poultry products of this country at more than 800,000,000 dols. for the last fiscal year, placing it on a par with the great dairy interests of America. The best dairymen nowadays are keeping track of the amount of milk and butter-fat each cow produces in a year, and by this means are discarding the unprofitable cows and keeping the ones that leave the larger balance on the right side of the ledger. To know actually how many eggs each hen on the farm lays would be too much of a task, especially where the hens are allowed to run at large, as is generally the case, but a reasonably accurate idea can be had at little expense, and this the farmer should do, getting into better laying strains as fast as possible. For general farm purposes, poultry that lays well and quickly comes to a good size for marketing is to be desired, and is the sort poultry dealers are encouraging in their agricultural campaigns.

Kansas and its Poultry Crop.

Poultry-keepers in Kansas are doing exceptionally well, and the hens are rolling mortgages away from the farms in that State. To-day the poultry business has reached such a state that the vaunted position of Kansas as a wheat producer promises to be eclipsed by the egg record. A great deal of attention is being paid to egg-production in consequence.

Production in Missouri.

According to the statistics just prepared, there were 146,851,000 dozen of eggs marketed from the State of Missouri during 1908, and they sold for 22,028,000 dols. Poultry, live and dressed, sold for nearly the same as the eggs, 22,096,000 dols., and represented 204,166,464 lb. In the last nine years the surplus poultry and poultry products sold have grown from 12,843,011 dols. to 44,124,000 dols. Reports indicate that the latter amount will double in the next three years.

Supply Not Equalling the Demand.

Massachusetts produces more poultry and eggs to the square acre than any other State in the Union, and yet last year this State imported over 33,000,00 dols.' worth of poultry products, according to A. F. Hunter, the veteran poultry authority. This does not give much colour to the pessimists, who predict that if the present increase in the

is very high in price they are content to pay 55 cents a dozen for eggs, the prevailing price in Boston and other eastern cities for new-laid eggs for the last month.

GEO. W. MILLER.

THE DANISH FARMERS' CO-OPERATIVE EGG-EXPORT ASSOCIATION AND ITS OPERATIONS.

By W. A. KOCK,

Consultant to the Danish Society for Profitable Poultry Culture.

AS often mentioned, the poultry-breeding industry in Denmark is of great importance, especially among the occupiers of small farms and cottages, which steadily increase in number in our country. The growth of the



DISPATCHING NEW-LAID EGGS TO ENGLAND.

[Copyright.]

poultry-production is kept up there will soon be an over-supply. It is true that in Canada and the United States the increase has been phenomenal, possibly unequalled in any other country, but still the supply has not kept pace with the demand. Americans understand something of the nutritive value of an egg, and because meat

egg trade has been extraordinary, especially during the last fifteen years, and our export of eggs now stands as the third largest of Danish agricultural products.

In the year 1865 we began to export eggs to England, the principal market for Danish agricultural products. Last year Denmark was the second largest provider¹ since

we supplied 21.5 per cent. of the total egg import to England. With the exception of 1 or 2 per cent., all eggs exported from our country are sent to the English market. In the year 1888 there were 4,592,200 hens, 32,200 turkeys, 643,900 ducks, and 213,500 geese, and by

prices. Among the consumers at this time were the Norwegian people, who were scarcely to be envied, since the eggs were shipped on slow sailing vessels.

Later we began, as mentioned, to export eggs to England, mostly to the Northern and Midland counties



INTERIOR OF THE PACKING STATION AT COPENHAGEN.

[Copyright.]

1903 the number had grown to 11,555,332 hens, 58,245 turkeys, 889,413 ducks, and 187,929 geese—figures which show better than many words the development which has taken place in connection with the poultry industry in Denmark.

Turning over the leaves of old reports, it appears that the egg business in the middle of the last century was in its infancy. At this time it was common for farmers to sell their eggs and poultry at the local home market to higglers or to the country tradesmen for a small payment (only 2fr. each in summer, 5fr. in winter). Often the eggs were given as payment for groceries. The produce at that period was generally of a bad quality, as a consequence of late collection of the eggs and other difficulties. The eggs in many cases were laid aside by the producers in order to obtain better

At first the quality and packing were bad, so bad that the well-known words from Shakespeare's "Hamlet," "There's something rotten in the state of Denmark," were used in regard to the quality of the Danish eggs. Much has been done in our country to develop the egg trade, and the result is well known. The Danish eggs have become better in quality, and are now so good that on the English market they take the next place to the Canadian, which are only sent in small supplies, mostly in winter-time. The average price obtained in England for our eggs was, last year, 139.6fr. per score.

This good result is largely due to the circumstance that large and small farmers on this territory, as on others, have a form of co-operation. At first eggs were collected by co-operative creameries, but it was in the year 1905 that the first great advance was made, since

it was then that the Danish farmers got their own Co-operative Egg Export Association.

The question was first brought forward by teacher Fr. Möller, from the village of Lindet by Vyle, at a meeting of the Agricultural Society of Vyle. This lecture led to the foundation of local egg societies, which are now found in different parts of the country, and the formation of a Head Society with Mr. Möller as president. The Federation adopted the name "Dansk Andels Ægexport" (the Danish Farmers' Co-operative Egg Export Association), which now has headquarters in Copenhagen, and packing and preserving stations and fattening establishments in that city and at Ringsted, Aarhus, Odense, Nexö, Rudköbing, Nyköbing Falstar, Aalborg, Veile, and Esbjerg, the chief port of shipment.

The Federation includes about 500 local egg societies (of at least ten members), with about 40,000 members, who pay 50fr. each on admission to the Head Society, and 1fr. each hen to the local society, which sends representatives to the yearly meeting of the Head Society. The regulations provide that eggs delivered to the collector from the local society must only be laid by the members' own hens. He has to deliver all his eggs except those used for hatching and in the household; further, the eggs must be gathered every day, in hot weather twice a day, and protected against frost, rain, sunshine, &c. China eggs must remain in every nest, and, last but not least, the produce must be absolutely clean and new-laid, as the principal object of the Head Society is to deliver to the English market the best possible produce.

Once a week the egg-collector receives the eggs, stamped on the broad end with the members' and local societies' number. Each member buys a stamp from the society for 20fr. The collector pays for the eggs after they are weighed, and enters the weight, price, and amount in the members' book. Every week the Head Society issues the prices. Then the collector drives the eggs to the packing-station, if it is near his place, but most generally the eggs are carried by rail in cases provided with cardboard sections, and holding 500 or 1,000 eggs. The expenses are borne by the local society, which pays the egg-collector 1fr. to 2fr. per pound; he has to pay the loss by breakages, which runs to more than 1 per cent., while the freight to the packing-station is paid by the Head Society. Here the eggs are first weighed, and then takes place the grading according to size—from 13lb. to 18lb. per 120 eggs; and the eggs are put on frames which contain eight to twelve dozen eggs, each egg placed in a hole by itself, and so skilful are the operators (mostly women) that they are able to sort them very rapidly. The next work is the examination by electric light, by which means it is easy to remove every stale and bad egg. By the number it is easy to detect any member who has delivered bad eggs, and, in consequence of the bye-laws adopted by the local societies, on the first offence he is warned, on the second is fined 5 kroner, then 10 kroner, of which the local society receive half and the Head Society the other half.

The eggs for England are packed side by side in long wooden boxes in two divisions holding 12 great hundreds in four layers; between each layer is placed wood, wool, and straw at the bottom and top. The work is generally done by women. Eggs are stamped with the trade mark of the Head Society.

It is of interest to know that the business in 1905, the first year, amounted to 80,118 kroner, with an average price of 42fr. Danish; and that in 1907 it was 4,568,797 kroner, with an average price of 51fr. for Danish pound. The profits from the Federation are distributed among the members through the local societies. Last year they amounted to 600,000 kroner, and, further, the Head Society is owner of a reserve fund of 200,000 kroner. Besides the egg business, the Head Society undertake the sale of old hens, chickens, &c., from the members, and are giving prizes every year to the best economical poultry-breeders in different parts of the country.

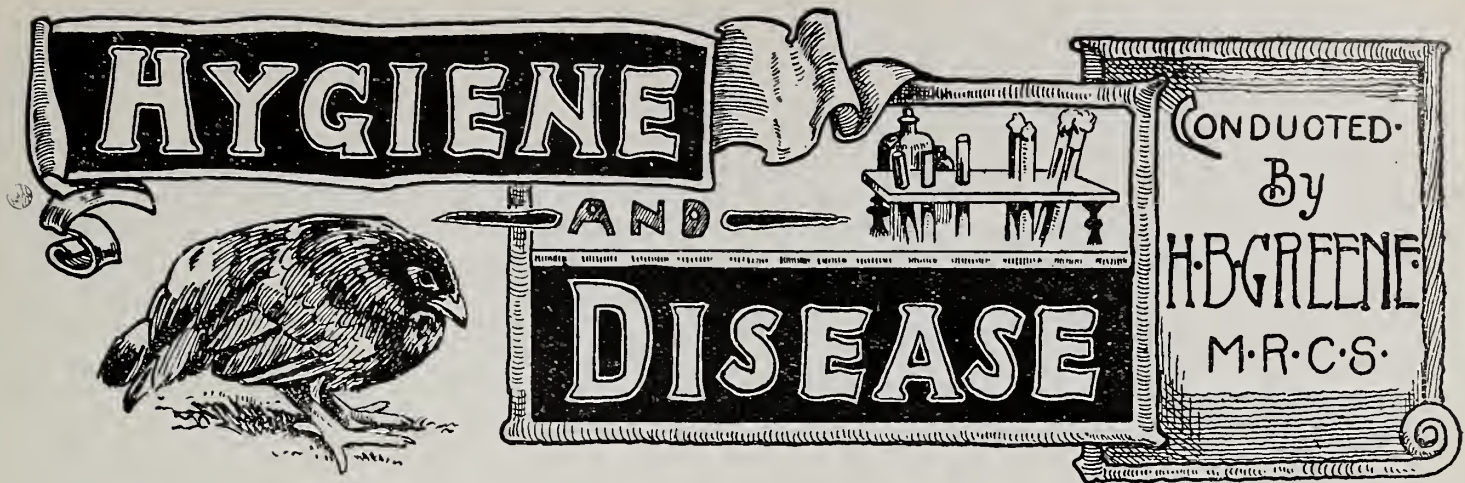
In the cellars of the egg-packing stations the pickling of eggs is carried on to a large extent. For this purpose large cement tanks are used, most containing a mixture of water-glass or lime-water, in which the eggs are put down from April or autumn or winter-time. Every tank holds from 70,000 to 100,000 eggs, and before they are packed in cases distinctly marked "Pickled Eggs" they undergo again an exact testing.

Danish money, 100fr. = 1 kroner = 1s. 1¼d.

POULTRY AND GAME FROM CHINA.

THE cold-stored chickens received a short time back from Hankow (China) are selling slowly. Some of the birds have a surprisingly pleasing appearance, being in this respect quite equal to those we receive from Russia. Evidently those responsible for the enterprise have taken every possible precaution to make it a success. The killing, grading, and packing have been carried out with great care by European experts. The chickens are graded into weights varying from 1½lb. to 3lb. per bird; the cockerels and pullets being packed separately into cases holding 12, 14, 28, and 36 birds each.

So far the shipment of game seems to have met with the greater success. These appear equal to any foreign game we receive. Here again very great care has evidently been taken in the handling to ensure their presenting a good appearance. The wild duck were in wonderful condition, so much so that one could scarcely believe they had travelled all the way from China, hardly a feather being awry. The consignment of game was composed of Wild Duck, Wild Geese, Widgeon, Teal, Pintails, Green Plover, Stone Plover, Snipe, Redshank, Hares, Bustards, Formosa, or Lake Teal, 1,300 Water Deer from the banks of the Yang-Tsi-Kiang River, and 9,000 head of Tame Pigeons. The Chinese Hares are easily distinguishable from other Hares, being much smaller than English or European Hares, weighing only about 3½lb. to 4lb. each when full grown. In all there were 18,000 cases in the shipment.



POST-MORTEM EXAMINATIONS.

We have made arrangements by which post-mortem examinations of poultry and game can be effected for our readers upon the following conditions :

1. *The specimen is to be forwarded postage or carriage paid and securely packed to "Biologist," 297, Trinity-road, Wandsworth Common, London, S.W.*
2. *The fee of 2s. 6d. (stamps will not be accepted) must be remitted with each specimen and a letter giving particulars of feeding and housing, or any symptoms which were observed before death.*
3. *Birds should on no account be addressed to the office of the paper. If forwarded there they will be returned to the sender.*

It is recommended that specimens be dispatched by parcels post, where practicable, and as soon after death as possible. A reply will be received by letter, defining the disease, its cause, treatment, and prevention.

Rheumatism and Pericarditis.

Rheumatism is a disease of such common occurrence among poultry as to be tolerably familiar to poultrymen, and many are the recipes for embrocations and liniments, all "never known to fail," that have been lauded as specific cures. The truth is that the treatment of rheumatism in fowls needs, for its success, little more than warmth, a comfortable basket of straw, and a few daily applications of some stimulating liniment to the affected joints or limbs. The lameness, swelled and heated joints, and stiff necks that are the chief signs by which the disease is recognised will with proper care soon disappear. Ranging in long wet grass and on heavy clay or confinement to a small muddy run are some of the predisposing causes of the malady, but a roosting-house with a leaking roof is perhaps the most potent factor of all, and whichever of these may be the influence at work, must be sought out and remedied. As long as it occurs only in its simple and uncomplicated form, rheumatism cannot be

classed among the more serious and fatal of poultry diseases. Nevertheless, it is often associated with, or, more strictly speaking, is followed by, a much graver ailment to which the name pericarditis has been given. The meaning of the term is "an inflammation around the heart," for it is the membrane or bag surrounding the heart which becomes inflamed, and sometimes distended with dropsical fluid in the course of a neglected case of simple rheumatism. The importance attaching to the functions of the heart naturally gives rise to symptoms of impeded circulation, both in the lungs and the general system, when those functions are interfered with. The bird with pericarditis breathes rapidly, its comb and wattles become of a dark, bluish-red colour, the heart may be felt to be beating much quicker than usual, the legs and shanks are often cold, and, lastly, the fowl shows an inability to pick up grain from the ground without staggering in the attempt. Carriage of the head drawn back is sometimes described as a sign of pericarditis. It is, however, not a characteristic one, and is more often suggestive of acute muscular rheumatism of the neck. However simple the symptoms of pericarditis enumerated above may seem on paper, the recognition of the disease is not so simple, for it by no means follows that all the signs appear prominently, or all together. Still when some of them are observed in a bird that has been suffering with rheumatism, the more serious complication may be suspected. It is not very profitable to attempt treatment when things have progressed so far, and it is better to destroy the bird. Apparent recovery may take place; but it is only apparent, for the adhesions between the pericardium and the heart—the consequences of inflammatory processes—bring about either enlargement or shrinking of the latter, and many instances of sudden deaths, especially in male birds, are found, on post-mortem examination, to have been due to structural defects in the heart which were set up by some previous attack of pericarditis.

Frost-bitten Comb.

Frost-bite, although more rarely met with in England than in Northern Europe, America, and Canada, is nevertheless fairly prevalent in a spell of cold, frosty

weather, and is especially annoying when it appears among exhibition poultry. Prolonged cold, acting as a chemical irritant, soon impedes, and finally arrests, the blood circulation in tissues so exposed and thin-skinned as are those of the comb and wattles. These, at first pallid, become congested and blue like a chilblain, and lastly black, in consequence of gangrene. As the parts die they may even drop off. In the early stage rubbing the frost-bitten comb with snow may effect a cure. Generally, however, local applications are also necessary. A very good one is specially mentioned in Wright's "New Book of Poultry" (page 583) as largely used in America. It is made up of 2oz. of lard, 1oz. of quinine, and 3oz. of kerosene, melted and mixed together to form an ointment to be applied with gentle friction. One which we would also recommend as a preventive is compounded as follows: Beat up an egg, add half a pint of vinegar, 2oz. of turpentine, and $\frac{1}{2}$ oz. of camphor previously dissolved in 1oz. of aromatic spirit of ammonia. These ingredients must be well mixed and some of the liniment rubbed on the comb and wattles daily, taking care that it does not get into the bird's eyes. A third recipe most useful when the surfaces are broken and chapped consists of 2oz. of powdered boracic acid well pounded together with 4oz. of glycerine and applied freely and often to the abraded parts. Some cod liver oil in the soft food will do much to keep the birds warm and render them proof against the harmful effects of keen frost.

Soft Eggs.

Soft-shelled eggs are an item in the debit account of poultry-keeping which runs away with much of the profit. Too often no attempt is made to discover the reasons why these eggs should come at times in an unusual number, or to remedy the abnormality. Deficiency of grit supply does not by any means exhaust the explanations, although hens are always much the better for a free amount of lime in the diet. Still, a sufficient supply of lime and other mineral salts is obtainable from many foods and grains to enable the egg organs to turn out perfectly-shelled eggs, even if grit is denied. One great cause of membranous eggs is overfeeding, especially with animal substances; the eggs are formed more rapidly than they can be shelled. Another cause is to be found in over-stimulation of the ovary, either by sexual influences or spices in the food, the former brought about by too few a number of hens being mated with the male bird. And yet another reason of soft-shelled eggs is traceable to congestion of the oviduct through cold and chill, especially when hens are kept under conditions that entail paddling more or less incessantly in liquid mud. All these influences are within the province and power of the poultryman to counteract, and it is marvellous how the number of marketable eggs will be increased if a little care is taken to go carefully into things, first endeavouring to ascertain the cause afterwards to take the requisite steps to rectify it.

ALL RIGHTS RESERVED.

BIBLIOGRAPHY OF POULTRY.

COMPILED BY EDWARD BROWN, F.L.S.

Compiler's Note.—With the object of securing as complete a list as possible of Poultry Books, it is proposed to give from time to time particulars as to such as are known. My own library embraces nearly 350 volumes on this subject, but there must be many not contained therein. I beg respectfully to request the kindly co-operation of owners of books not named, with a view to making the list exhaustive. In sending particulars I request that the following be stated: (1) Full title, and sub-title, if any; (2) Author's complete name, with any information respecting the writer; (3) Place of publication and name of publisher; (4) Date of publication, if given; (5) Number of edition; (6) Number of pages and size of book; (7) If illustrated; and (8) Whether in paper or cloth. Acknowledgment will be made of source of information. The books marked with an asterisk I have not been able to verify, and fuller details will be welcome both as to books and authors.

LIST No. 4 (Continued from page 212, January, 1910).

WORKS PUBLISHED SUBSEQUENT TO 1850.

Comyns, Alexander, B.A., L.L.B. (Hon. Secretary Poultry Club; first Editor of *Poultry*; founder of *Feathered World*; d. 1891).

FANCY POULTRY. Part I. Breeding and Feeding. London: Author, 64 pp., illustrated.

1889. 4to.

POULTRY FOR THE PEOPLE. London: Author, 112 pp., illustrated.

1889. 8vo.

THE STANDARD OF EXHIBITION POULTRY. Part I. London: The Poultry Club, 62 pp., illustrated, paper cover.

1886. 12mo.

[Part II. was not issued for some years. See Threlford, T.]

Consular Reports of United States.

THE POULTRY INDUSTRY IN FOREIGN COUNTRIES, by U.S. Consuls. Washington: U.S. Bureau of Statistics, 116 pp., Vol. XLIII., No. 159, paper cover.

1893. 8vo.

Cook, William (introducer of the Orpington Fowl).

PRACTICAL POULTRY BREEDER AND FEEDER; or, How to Make Poultry Pay. London: *Journal of Horticulture*, 107 pp., illustrated.

1883. 8vo.

Third Edition. Orpington, Kent. The Author, 271 pp., illustrated. Undated. 8vo.

Fourth Edition, 277 pp.

Undated. 8vo.

Twelfth Edition. St. Mary Cray, Kent: The Author, 266 pp., illustrated. 1901. 8vo.

DUCKS, AND HOW TO MAKE THEM PAY. St. Mary Cray, Kent; The Author, 107 pp., illustrated.

1895. 8vo.

Cooper, J. W.

GAME FOWLS, THEIR ORIGIN AND HISTORY; With a Description of the Breeds, Strains, and Crosses; the American and English Modes of

Feeding, Training, and Healing; How to Breed and Cross; Improving Quality and Preserving Feather; together with a Description and Treatment of all Diseases incident to Game Fowls. West Chester, Pa., U.S.A.: The Author, 304 pp., illustrated.

1889. 8vo.

Corbett, Prof. Adolphe.

* **HOW TO HATCH AND RAISE EVERY VARIETY OF POULTRY WITH THE AID OF MANURE; How to Make 500 dols. a Year with Twelve Hens.** Hempstead, L. I., U.S.A.: *Inquirer* Office, 23 pp.

1874. 8vo.

THE POULTRY YARD AND MARKET: A Practical Treatise on Gallinoculture, and Description of a New Process for Hatching Eggs and Raising Poultry. New York: Orange Judd Co., 96 pp., paper cover.

1877. 16mo.

[Contains description of hatching by means of horse manure.]

Cornevin, Ch. (Professor at the Veterinary College of Lyons, France; past President of the Agricultural Society).

LES OISEAUX DE BASSE-COUR: Cynes, Oies, Canards, Paons, Faisans, Pintades, Dindons, Coqs, Pigeons. Paris: J. B. Baillière et Fils, 322 pp., illustrated, paper cover.

1895. 8vo.

Crafer, Alfred (Poultry Editor, *Lloyd's Weekly News*).

LLOYD'S POULTRY BOOK: With Hints on the Rearing and Management of Fowls, Ducks, Geese, and Turkeys. London: Edward Lloyd, Ltd., 46 pp., illustrated, paper cover.

1909. 8vo.

Craig, Quintin, and James Lyell.

THE DISEASES OF POULTRY AND PIGEONS: Their Causes, Symptoms, and Treatment. London: L. Upcott Gill, 78 pp., paper cover.

1890. 12mo.

Cresswell, O. Ernest, J. P. (past President Poultry Club; well-known breeder of Dorkings; d. 1908).

POULTRY AND EGGS: Reprint of paper read at the Dairy Conference, Ludlow, 1888. London: Vinton and Co., Ltd., 14 pp., paper cover.

Pamphlet. 1888. 16mo.

Criado Dominquez, Julian.

* **TRATADO DE AGRICULTURA.** Madrid, Spain: La Propaganda, 104 pp.

1900.

Croad, A. C. (original importer of Langshans; pseudonym of Miss Croad).

* **LANGSHAN FOWLS:** Their History and Merits. London: Cassell, Petter, and Galpin, 48 pp., illustrated.

1877. 8vo.

Second Edition, 48 pp. 1880. 8vo.

* **THE LANGSHAN FOWL;** Its History and Characteristics, with Some Comments on its early opponents. London:

1889.

Third Edition. London: Bowers Brothers, 122 pp., map and illustrations. 1899. 8vo.

THE LANGSHAN CONTROVERSY. Worthing: The Author, 28 pp., illustrated, paper cover.

1879. 4to.

Curtis, Grant M. (Editor of *Reliable Poultry Journal*; past President American Poultry Association).

SUCCESS WITH POULTRY: A Book on Successful and Profitable Poultry-Raising, containing Valuable Information for Persons who Think of Engaging in any Branch of the Poultry Business for Profit. Contributions by various Writers. Quincy, Ill., U.S.A.: *Reliable Poultry Journal*, 112 pp., illustrated, paper cover.

1900. 4to.

Cyphers, Chas. A. (inventor of the Cyphers and Model Incubators).

INCUBATION AND ITS NATURAL LAWS. Buffalo, N.Y., U.S.A.: The Author, 111 pp., illustrated. Undated. 12mo.

EGGS. BROILERS AND ROASTERS. An Essay Lesson in Practical Poultry-Culture. Buffalo, N.Y., U.S.A.: The Author, 63 pp., illustrated, paper cover.

1906. 8vo.

Darrah, H. C.

* **POULTERERS' AND FARMERS' GUIDE.** Dubuque, Ia., U.S.A.:

1874.

Darrow, J. Wallace.

* **FIVE HUNDRED QUESTIONS AND ANSWERS IN POULTRY-KEEPING:** A Book of Practical and Authentic Information in the Form of Questions and Answers on Various Subjects, as Feed and Care, Diseases, Eggs, Incubators, Buildings, &c., with a Chapter on Turkeys, Geese, and Ducks. Chatham, N.Y., U.S.A.: *Fanciers' Review*, 56 pp.

1891. 8vo.

* **LOW COST POULTRY-HOUSES:** Plans and Specifications for Poultry Buildings costing from 25 dols. to 100 dols., with a Chapter on Poultry-House Conveniences. Chatham, N.Y., U.S.A.: *Fanciers' Review*, 48 pp., illustrated.

1893. 8vo.

Davenport, Charles Benedict (Director of Station for Experimental Evolution, Cold Spring Harbour, N.Y., U.S.A.).

INHERITANCE IN POULTRY. Washington, D.C., U.S.A.: Carnegie Institution, 136 pp., plate illustrations, paper cover.

1906. 4to.

[Records the Mendelian Experiments conducted by Professor Davenport.]

Davenport, Eugene, M. Agr., LL.D. (Professor University of Illinois, Director of Agricultural Experiment Station).

PRINCIPLES OF BREEDING: A Treatise of Thremmatology, or the Principles and Practices involved in the Economic Improvement of Domestic Animals and Plants; with Appendix by H. L. Rietz, Ph.D. Boston, U.S.A.: Guin and Co., 727 pp., diagrams.

1907. 8vo.

Davies, C. J.

POULTRY: A Handbook for Poultry-Keepers. London: T. C. and E. C. Jack, 118 pp., illustrated.

1907. 8vo.

Davies, J. H.

* **THE A B C OF POULTRY CULTURE:** A Thoroughly Practical and Original Book by a Practical Breeder, Especially Designed for Beginners. Chatham, N.Y., U.S.A.: *Fanciers' Review*, 40 pp., paper cover.

1894. 8vo.

* **THE ART OF POULTRY-BREEDING:** A Discussion of Out-Crossing, In-Breeding, Breeding to Feather, and Cross-Breeding for Market Purposes. Chatham, N.Y., U.S.A.: 46 pp., paper cover.

1896. 8vo.

De la Bere, Kinard B. Baghot (see Edwards, Kinard).

THE NEW POULTRY GUIDE FOR BRITISH FARMERS AND OTHERS. London: Seeley and Co., Limited, 64 pp., illustrated.

1897. 4to.

de Roo, V. La Perre (of the Acclimatation Society of Paris, &c., &c.).

LA CONSANGUINITE ET LES EFFECTS DE L'HEREDITE. Paris: J. B. Baillière et Cie., 197 pp., illustrated, paper cover.

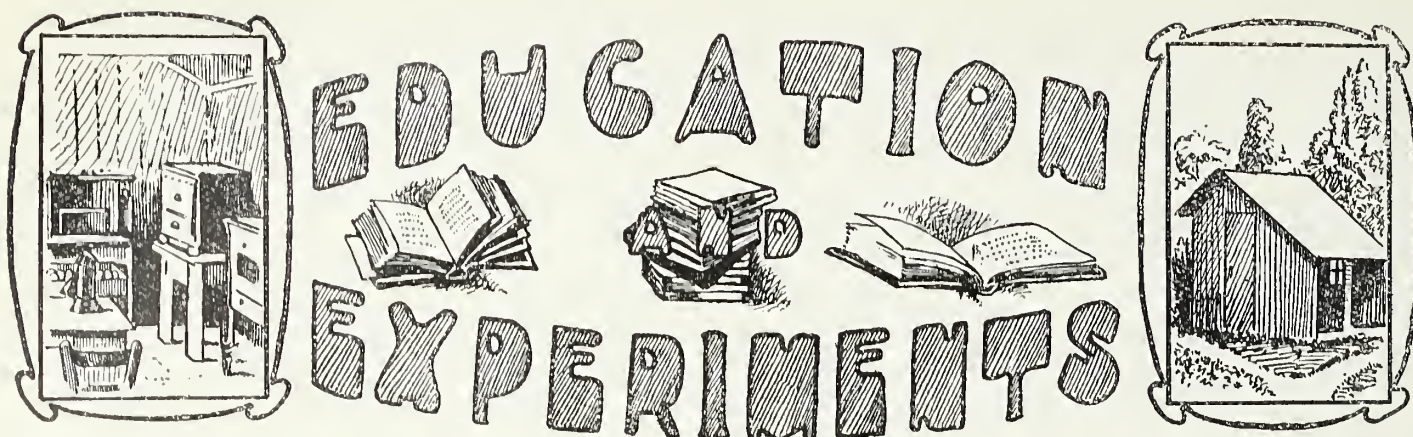
1881. 8vo.

[Contains records of experiments with fowls.]

MONOGRAPHIE DES RACES DE POULES. Paris: Emile Deyrolle, 379 pp., 32 plates, paper cover.

1902. 8vo.

(To be continued.)



POULTRY INSTRUCTION AT AGRICULTURAL COLLEGES.

THE "Annual Report on the Distribution of Grants for Agricultural Education and Research in the Year 1907-8" (Cd. 4802), published recently, reveals the inadequate attention which poultry-keeping receives at the various agricultural colleges and farm schools throughout England and Wales. The Report does not include Scotland, respecting which similar returns are unavailable. Hence the following observations are necessarily confined to Southern Britain.

Seventeen colleges and schools are reported upon. These do not include Cirencester and Studley, both of which give instruction in poultry-keeping, and private institutions, such as Aspatria, as these have not received grants from the Board. The poultry section of the Lancashire County Council Farm at Hutton does not figure in the above list, but the excellent courses held there deserve recognition. The institutions named in the Report as agricultural are :

University College of North Wales, Bangor.
University of Leeds.
Armstrong College, Newcastle-on-Tyne.
University College of Wales, Aberystwyth.
University of Cambridge, Agricultural Department.
University College, Reading.
South-Eastern Agricultural College, Wye.
Midland Dairy and Agricultural College, Kingston.
Harper Adams Agricultural College, Newport, Salop.
College of Agriculture and Horticulture, Holmes Chapel.
Agricultural and Horticultural College, Uckfield.
Essex County Technical Laboratories, Chelmsford.
Harris Institute, Preston.
Eastern Counties Dairy Institute, Ipswich.
Cumberland and Westmorland Farm School, Penrith.
Hampshire Farm School, Basing.
Agricultural Institute, Ridgmont, Beds.

At eleven of these, lecturers on poultry-keeping are named, of which five (Leeds, Reading, Kingston, Uckfield, and Ipswich) are specially for this subject, but at the other six (Wye, Holmes Chapel, Chelmsford, Penrith, Basing, and Ridgmont) combine it with dairying or bee-keeping. Bangor, Newcastle, Aberystwyth, Cambridge, Harper Adams, and Preston have no lecturers on poultry.

In view of the importance of poultry-keeping in rela-

tion to general agriculture, it might be expected that every agricultural college and school would include this subject in its ordinary curriculum. Eleven apparently do so, in some cases to a very limited extent, but Bangor, Newcastle, Aberystwyth, Cambridge, Harper Adams, and Preston have no such provision.

Apart from the Lancashire County Farm at Hutton, only two institutions, Reading and Ipswich, are recorded as providing special courses in poultry-keeping.

All the seventeen colleges and schools, except two, Ipswich and Chelmsford, are reported as having demonstration or teaching farms, but, although not clearly stated, it would appear that Bangor, Newcastle, Aberystwyth, Cambridge, Kingston, and Harper Adams have no poultry plant. Many of the others are totally inadequate.

At only two of these, Leeds and Reading, was experimental work in poultry-keeping carried out.

It is evident that county and college authorities and agricultural instructors require education as to the relative importance of poultry-keeping to other branches. A supreme difficulty has always been to secure the support and sympathy of the last-named, of which this Report is abundant proof.

[Since the publication of the above Report, the Reading College Poultry Farm at Theale has been closed.—ED. I.P.R.]

Fertility and Its Commencement.

Further particulars are given in *Monthly Hints on Poultry* as to the fertility experiments at Llangammarch Wells Poultry Farm. Six hens were mated at 12 noon on July 22, 1909, and the following are the periods when the eggs first showed fertility, though evidently in some cases not strong enough to produce a living chicken :

Hen.	First Egg.	First Fertile Egg.	Result.
652	... July 23	... July 25 (72 hours)	... Chicken.
625 24 26 (94 ")	... Dead in shell
669 23 24 (53 ")	... Ditto.
482 26 30 (193 ")	... Chicken.
470 23	—	—
639	... Aug. 5	... Aug. 5 (335 hours)	... Dead in shell

This does not prove much, and unless the hens were virgins no conclusion can be deduced therefrom.

THE POULTRY-KEEPER'S OTHER INTERESTS.

By "HOME COUNTIES."

*Author of "The Townsman's Farm," "Poultry Farming: Some Facts and Some Conclusions,"
"The Case for the Goat," "Country Cottages," &c."*

"Poultry should be only one part of the stock."

—*The Secretary of the N.P.O.S. in the "Cyclopædia of Modern Agriculture."*

CONSTRUCTION OF OUTBUILDINGS. 3

I have a yard of books on my shelves about cottage-building, but the poultry-keeper wants something out of the ordinary run. He is a man with the use of his hands, and he looks for more than pretty designs and plans. He wants to know about methods of construction and costs. This is particularly the case where outbuildings are concerned, for he may wish to take a hand in the putting of them up. He desires to know not only what to do, but how to do it. A book which is just out is particularly suitable for poultry-keepers who are intent on doing some building. It is entitled "Buildings for Small Holdings," is published by Mr. Batsford, of High Holborn, and the price is 3s. 6d. The author, Mr. Thomas Potter, I once called "the father of concrete." Although a veteran, he could not, of course, have invented concrete, for the Romans were masters in its use, but he certainly knows more about handling concrete in the various ways in which it can be handled than anyone else I know. The poultry-keeper, however, does not necessarily wish to build in concrete. Mr. Potter comes to his assistance by reason of the fact that he is an old clerk of the works; indeed, the secretary of its society and the editor of its journal. He talks learnedly on the materials, cost, and methods of construction of every bit of the building part of a small holding because he has built many cottages and all sorts of outbuildings in various counties.

A FINE BLOCK.

Most of Mr. Potter's book is devoted to details of the construction of various types of outbuildings, giving accommodation for cart and implements, stable, fodder, &c., cows, meal, pigs, and poultry. Of course the poultry-keeper does not want information about the housing of birds, and will, no doubt, simply cut out this annexe of Mr. Potter's plan. It is interesting, however, to look at the way in which the space is disposed for the rest of the building. The form is a parallelogram 83ft. long outside and 16ft. deep inside. Eight feet of the width is given to the pig court and bedplace, 7ft. to calves, and 8ft. to the meal store (with mixing trough and boiler), which communicates, behind the accommodation for the cows, with hay and straw fodder, 10ft. and 8ft. The cow-house is 16ft. wide; the stable is 12ft. wide; carts and implements have a space of 14ft. square. There is a pump and a trough in front, and behind the buildings a rain-water tank. The foundations and preliminary work and cement, concrete, and paving Mr. Potter figures out at £40 12s. If the building be framed in wood on a concrete base he puts the wood frame and weather boarded walls, not lined internally

with wood, but including door sills at half a crown each, and steel joists, at £32 11s. Lining on the inside with inch weather board would mean another £10 note. Wood-framing and 24 gauge galvanized corrugated iron, not lined, would be £35 17s. 8d. The next better qualities of sheets would add £2 13s. and £8. If brick be preferred to wood or galvanized iron, then the cost of walling is £52 9s. Seven-inch concrete walling might be done at £41 13s. The division walls of wood or concrete would be about £18 or £19. Mr. Potter discusses all sorts of roofs from slate to ruberoid and vulcanite, but evidently thinks that if the water is going to be saved there is a good deal to be said for slate. The woodwork for roof boarded purlin would be £21 16s. Mr. Potter puts the cost of slates, including battens, eaves, gutters, ridge, and rain-water pipes, at £40 15s. Doors, windows and fittings, tar varnishing, &c., bring the bill to £188 for a wood-framed building covering 1,158 superficial feet or 173 superficial yards of ground area. Water supply is excluded, also lime whitening and builders' profits and superintendence. The water supply tank, pump, and water-carrier are estimated to cost £34 extra. Against the £188 (or 21s. 9d. per yard super.) for a wood-framed building we have £192 (or 22s. 4d.) for a galvanized iron plan, allowing for the less expensive sheets; £210 (or 24s. 3d. per yard super.) for concrete with patent tiles, and £221 for brick wall and Major's tiles. Slates add a £5 note. From all these totals deduct what may be supposed to be the cost of the poultry place, 14ft. by 6ft., which a poultry-keeper would probably not need.

A RAIN-WATER TANK.

The particulars which Mr. Potter gives concerning the rain-water tank are of interest to everyone who, like myself, has tried his hand at building a water-tight tank. I am interested in seeing that our author deducts from the annual amount of rainfall—let us assume it is 30in.—as much as 10in. for waste, absorption, and gutter overflows. From the building, particulars of which have been given, Mr. Potter reckons there should be got an average of 43 gallons a day all the year round. If this were drawn upon daily, a tank to hold about a third of that amount, 5,300 gallons, should be ample. A circular tank is not only cheaper, but very much stronger than a square one. A water-tank, 9ft. in diameter clear, will hold about 400 gallons for every foot deep, and would need to be about 15ft. deep below the inlet in order to hold 5,300 gallons without the suction pipe going quite to the bottom. As materials, concrete or brick is recommended. Whether brick or concrete, Mr. Potter would have sides and bottom cemented inside

with cement and sand, 1 to 3. The top would be 5in. concrete on a 4in. by 3in. girder, and any materials for reinforcing that are handy. An old iron bedstead would come in handy. Mr. Potter estimates between £24 and £30, according to cost of bricks and cement, or £5 10s. per thousand gallons for a brick tank 14ft. deep and 9ft. in diameter, the walls 9in. in thickness, built in mortar, the points raked out, cemented with cement mortar 1in. thick, 1 to 3, the bottom the same and concrete top, grouted with neat cement, a 24in. by 24in. lock-down manhole cover, ventilating pipe, and digging. Concrete should be less.

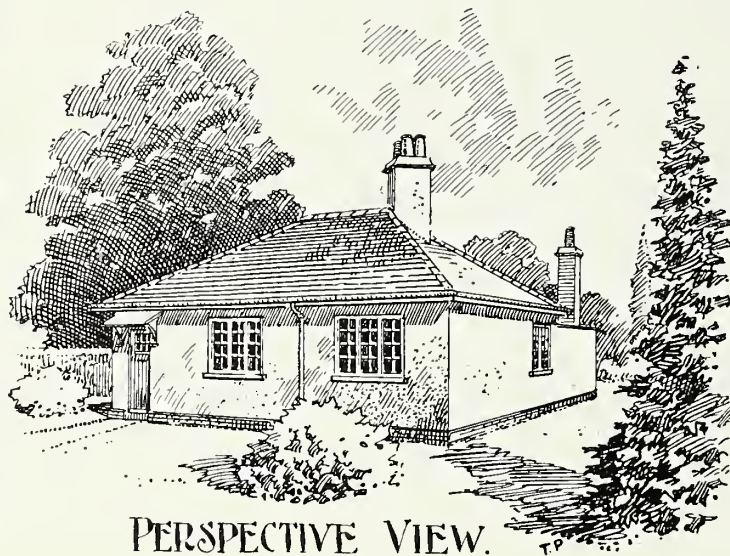
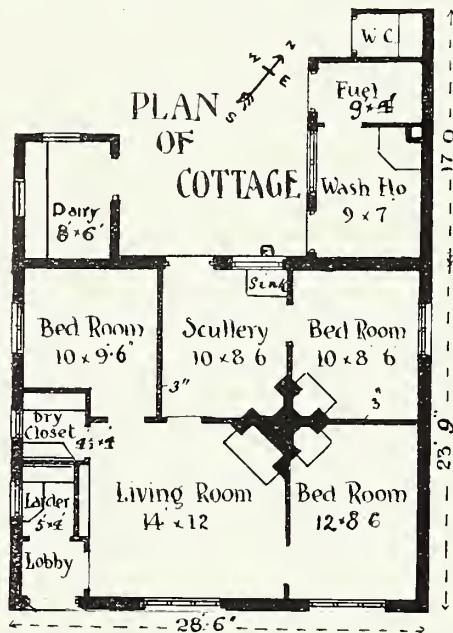
A SMALLER TANK.

In the case of the single cottage the roof area is 800 superficial feet. Allowing for getting 20in. or a 30in. rainfall, there are 8,832 gallons a year or nearly 24 gallons a day. To hold 4,500 gallons a circular tank

ties, or cement concrete 7in. thick, rough casted. Wooden walls are cheaper than brick or concrete, but there is the cost of painting and the fact that painting is difficult with flowers and evergreens. Also there is the risk of rats and fire. Mr. Potter estimates the cost of his single bungalow, including everything but rain-water tank and pump and drainage, which depends on circumstances obviously, at £200, brick and patent tiles being used. Concrete under favourable conditions might be £180. The author's system has been "pricing out the quantities of all the work at fair average value." Two cottages side by side, bungalow form, should be proportionately cheaper than one.

BUNGALOW VERSUS SECOND STOREY.

In nothing does Mr. Potter show his sanity more clearly than in preferring, in the country, where there is plenty of room, the bungalow type of cottage. The



A CONCRETE COTTAGE.

[By courtesy of Mr. Batsford.]

9ft. clear in diameter and 11½ft. deep below the inlet, would be needed. Say £30 or less in concrete. But 24 gallons a day would not provide water for a bath. The roofs of the outbuildings would have to be requisitioned. A 2½in. pump with 1½in. suction pipe is big enough, we are told, and I have found it certainly so.

A BUNGALOW COTTAGE.

Mr. Potter's particulars of a bungalow cottage are extremely interesting, and as serviceable as his writing about buildings. Mr. Potter took one of the prizes at the Cottage Exhibition, and knows how comfort and economy are to be got in cottage-building. The plan shows the dimensions of the bungalow. Note the wash-house and its steam right away from the house. Note also the bedrooms getting all the benefit of all the fire in the chimney and also the heat from the living room. The outbuildings and dairy have flat concrete roofs cemented and constructed to come under the eaves gutters of the main building. The outside walls are either two half-bricks in thickness, tied together with galvanized wall

square bungalow has certainly a very strong case. It is economical—there is more walling to a 50ft. by 18ft. building than a 30ft. by 30ft. one. The bedrooms are not limited in size by the buildings below; the space occupied by stairs is utilised, and there is no cost of stairs or of the areas leading thereto. Mr. Potter believes in floors made of boards nailed on to the concrete. Cinders can be put in the aggregate for the purpose. But, though he doesn't say it in this book, he has made some fine floors with linoleum on concrete, the linoleum only being put on, of course, when the concrete was dry. I have had great pleasure in drawing attention to this practical book. As I have mentioned the long acquaintance Mr. Potter has with concrete, I may say that there is a book of his under that simple title published by the same publisher as the one now before me, which is a mine of information on the subject. It might also be useful for somebody to know that Mr. Potter is good enough to let out the steel framework with which he has done building in concrete monolithically.



AN account of the Worcestershire Poultry Farm would seem, at the first blush, to be an exceedingly easy matter. It is run purely on utility lines, its sole aim and endeavour being to provide eggs and poultry for the consumer of these articles, and the bulk of its trade being directly with the private customer. Its owner has never sent a bird to a show, and, so far as we know, has no intention of doing so. There is thus, ostensibly, no fancy side to the business, no record of prizes won, or nearly won, no tale of famous strains, except laying strains, to distract the attention from the single purpose of utility. Yet the description is not as easy as it seems. We visited the farm-house once in high summer and the second time in late November, and the impression it made upon us on the second occasion was so different from that we received on the first as to be somewhat confusing. At the time of the summer visit, which was that of the strawberry season also, Nature, in spite of the scant assistance she had received from the weather, had painted all things gay. Trees were in full and brilliant foliage, hedgerows alive with blossom, meadows scented with the odour of their hay. Fields of currant and raspberry bushes, acres of gooseberries, orchards of apple and pear and plum, had their fruit either ripening or just set. Though the day was misty and the ground damp with recent rains, the warmth of the air was felt. And the poultry—well, the bulk of the stock was out on

holiday. We could hear them everywhere, but when it came to the matter of seeing them, it was mostly a game of hide-and-seek among the fruit-bushes. In one large meadow we came across a wandering horde of mixed birds, and were able to secure a snapshot of their straggling ranks. But for the most part it was only the offer of food that induced them to quit their ample and luxuriant shelter and shade and come out into the long, straight grass avenue, dotted with an occasional coop, that bisected or bordered the fields of fruit crops.

The winter visit showed, as might be expected, a total change in the external characteristics of the farm. The last of the leaves—for it was a late season—were barely off the trees; but the dreariness of the month was perceptible in every particle of inanimate growth. The wind blew in a fashion that made one realise that at this spot we were standing 500 feet above sea-level. But—and this, at least, was a reminder of our summer visit—there were, despite the fact that some forty-eight breeding-pens had been mated up and the scratching-sheds had their full complement of birds, a surprising number at liberty in the open. “A free range conduces to hardiness,” it was remarked to us, and herein we have at any rate one important feature of the management of the poultry at the Worcestershire Poultry Farm—viz., as much freedom as is possible, winter or summer.

The freedom of the birds, however, does not

TRADE SUPPLEMENT

warrant our continuing these somewhat random remarks, into which, nevertheless, we may have contrived to introduce a few compensatory facts, or absolve us from setting forth such details as are profitable to know of the Worcestershire Farm, its history, and its conduct. The total area of the farm, then, is as near as possible 600 acres, of which, roughly speaking, half is grass and half arable. Nearly 100 acres of the latter are devoted to fruit, the remainder being utilised for market vegetables and ordinary farming. Standing on the south-east side of the Lickey Hills at Tardebigge, within a mile of Blackwell Station and near Bromsgrove, its soil is light to medium. Poultry, cattle, and pigs comprise the live-stock kept. The stock of poultry varies from 3,000 head in January to 7,000 in June, the dairy herd consists of about 90 milkers, principally non-pedigree Shorthorns, and there is a herd of between 500 and 600 pedigree white pigs. The Worcester and Birmingham Canal runs through the farm, and advantage is taken of this to maintain daily communication with the City of Birmingham by means of a motor-boat, which leaves the farm at 6.15 a.m. with milk, eggs, poultry, &c., and returns in the afternoon at 3.30 p.m. Eggs, varying in number from some 1,500 in early November to 10,000 in the spring, are sent to Birmingham by this route, where they are retailed, together with dressed poultry,

fruit, and vegetables, to some 300 customers in Edgbaston. The distance to Birmingham by canal is fourteen miles, and the boat has done the daily journey of twenty-eight miles for the last three years.

Some idea of the magnitude of the business may be gauged from the foregoing facts. Let us glance for a moment at its beginnings. As in so many large enterprises, these were small. The farm was started about twenty years ago at a time when the dictum that "poultry could not be made to pay" was far more generally accepted than it is to-day. Even then, however, there were people who believed that financial success or failure largely depended upon management, and among them were the proprietors of the Worcestershire Farm, whose belief was founded on a previous experience of farm-yard poultry. Accordingly the following trial was made. In two open-fronted sheds 90 fowls were placed, 45 in each shed, and given free range over good grass land, each shed having the shelter of a good hedge. A careful record was kept of the food, labour, and all odd expenses, and the amount received for eggs produced. After allowing for all outgoings, including depreciation of plant and birds, a net profit of nearly £28 per 100 birds was shown. This was considered sufficiently encouraging to increase operations, and two years later the stock was augmented to over 500 laying birds, scattered on free range



WHITE AND SILVER WYANDOTTES.

[Copyright.]

over some 300 acres of land. These, again, showed sufficient profit to warrant further increase, and the stock was raised shortly afterwards to over 1,000 head of laying stock, pure breeds being now substituted in most cases for the crosses previously employed; also many of the birds were wired in pens. Further increases in plant were required almost yearly, and the type of house was altered several times, as experience dictated. But in every house built one cardinal point was never overlooked, and that was ample ventilation. In fact, the proprietors of the Worcestershire Poultry Farm were among the first to recognise the value of, and build, open-

values cleanliness. The interiors are white-washed and littered with straw waste. We were informed that the scratching-shed system, though requiring great capital expenditure, gave the best return, and any increase of plant in the future will probably be in this direction.

As to feeding, the usual methods are in vogue. In the morning a soft feed is given between 7 and 8 a.m., and a hard corn feed in the afternoon. Sharps is the chief ingredient of the morning mash, being worked up with boiled vegetables and meat. The chief grains used are wheat, oats, and kibbled Indian corn. Meat in the autumn and winter is given three or four times



ONE OF THE SCRATCHING-SHEDS.

[Copyright.]

fronted houses for poultry. There are, roughly, three types of house in use on the farm to-day, all of which are satisfactory, though for all-the-year-round egg-production what is known as the scratching-shed is preferred. We give a picture of one of four scratching-sheds which were in use at the time of our visit. Each is divided into five pens, and each is fitted in front with a line of trap-nests and feeding-troughs, accessible from the outside. It should be noted, too, that, by an ingenious arrangement of wire netting, the birds are prevented from perching on the nest-boxes, this latter habit being a frequent source of trouble to the poultry-keeper who

per week. Nearly all the hatching and rearing are done with hens. As soon as the chickens are hatched they are placed with the hens in wooden coops, in the fruit plantations, which make ideal rearing grounds. Here they find a considerable amount of natural food, as the ground is being constantly worked in the spring and early summer with hoes. They stop with the hens till eight to ten weeks old, according to the season of the year, and are then removed to sheds and given free range on good grass land. Three hundred of the best pullets are transferred in the late summer to the scratching-sheds, where their individual egg records are



A FAMOUS EGG-LAYING STRAIN OF AMERICAN
WHITE WYANDOTTES.

[Copyright.]

kept. Although rapid laying is a good sign, it does not always follow that the hens that lay the fastest will lay the most eggs in twelve months. For instance, last autumn a Silver Wyandotte held the record for laying the greatest number of days without a break—viz., twenty-six—but by Christmas her total for the three months had been surpassed by several birds who were not such brilliant, but were more persistent, layers. Breeders in America and Australia have been drawn upon to assist in establishing the laying qualities of the birds. One of our photographs shows a pen of American White Wyandottes of a famous egg-laying strain.

We said at the outset that the purpose of the Worcestershire Poultry Farm was wholly utility, and that not one of its birds had ever figured in the show-pen. We must conclude with a reference to the remarkable successes achieved in the Utility Poultry Club's Laying Competitions. In the 1906-7 competitions this establishment's Buff Rocks were second in Section A, and their strain of Wyandottes fourth in Section B. First prize, "Gold Medal and First-Class Certificate," was secured by their entry of White Wyandottes in the 1908 Twelve Months' Competition, with a total of 1,034 eggs for the six birds, the best bird laying 213 eggs. A success was achieved with White Leghorns in the 1904-5 event. This record, by itself, is sufficient testimony to the quality of the utility stock that is bred at the Worcestershire Poultry Farm.

MIXED
BIRDS
IN THE
MEADOW.



[Copyright.]

THE TAMLIN MANUFACTORY.

IN the year 1890 Mr. Tamlin commenced making incubators in a small way at Putney, and from such a beginning has grown the present large works situated at Twickenham. The trade in poultry appliances was in its infancy at this date, and the number of makers was very small compared with those known to-day. The first year's turnover was small, amounting to considerably under £1,000, but a commencement was made, and the foundation laid for the huge

Western Railway. Not only is the nearness of the station an advantage from the point of view of dispatching the finished goods, but the buildings lend themselves admirably to advertising, as the railway line runs but a few feet from the works. Everyone who passes St. Margaret's Station must have noticed the large painting of a Nonpareil Incubator that adorns the end wall of one of the main shops. The details of the advertisement must also attract the attention, for the



AS SEEN FROM ST. MARGARET'S STATION.

business that is carried on now. After four years at Putney a move was made to Richmond, but after twelve years the increase in output demanded larger premises, and, therefore, in 1906, a second move was made, this time to the present site at Twickenham occupied by the St. Margaret's Works.

It would have been impossible to have found a more convenient site, for the works adjoin St. Margaret's Station on the London and South-

picture shows the incubator placed in the centre of a field, with a pair of birds perched on the top; the drawer of the machine is open and the chickens are hatching. As an advertisement the painting is all that can be desired.

In selecting the present site, Mr. Tamlin not only considered his present needs, but he has looked forward into the future and has allowed for still further possible enlargement. In all two and three-quarter acres of land are available,

TRADE SUPPLEMENT

but only about two acres are being used; however, judging by appearances, one imagines that it cannot be very long before the remaining three-quarters of an acre will be covered with

room, where an exact register is kept of all correspondence and orders, the cashier's office, with its strong-room and safe, and the order office. The strong-room has stood Mr. Tamlin



THE MAIN WORKSHOP

sheds and buildings. Another very important advantage of the situation chosen is the nearness to the canal, for the wharf is only about a hundred yards distant from the main gates. As the timber used in the construction of the various appliances is imported, it is essential for the works to be near a waterway, so that the cost of transferring it from the barges to the stacks is as low as possible.

The building that forms part of the main entrance, in which the offices are situated, is 480ft. long by 28ft. wide, and forms one of the two large ranges of shops that go to make up the works. The first part seen by the visitor is the show-room; and here all the hundred and one small appliances are exhibited, together with different types of incubators and foster-mothers. It is surprising what a large number of "smalls" are sold, yet each one has a definite use on the modern up-to-date poultry farm. Intending purchasers can here have demonstrated to them the use and advantages of each article, and altogether this section is an education in itself to the visitor. Behind the show-room is Mr. Tamlin's private office, and from this place the entire work of the factory is controlled, for the owner believes that the greatest factor towards success is the personal attention, even to detail, of the one in charge. Arranged around the private office are others, including the filing-

in good stead, for some months ago his premises were visited by burglars, but they could make no



ELEVATED TIMBER-CARRIER IN THE MAIN SHOP.

impression on the solid iron construction. If we were asked to state in one word the secret of the success of the works, we would sum up our ideas and say "organisation," for at every point one notices how perfectly everything is arranged and how smoothly the work is accomplished. And organisation is not only applied to the manufacturing side, but to the office as well, for the system that has been adopted for book-keeping is complete in every detail.

In making our round of inspection we commenced with the raw material in the lumber stacks. For storing the timber large sheds are used so as to preserve the wood from rain. At the time of our visit a new supply was being unloaded from the barges on the canal, but even so there were about 1,000 standards in stock, and when it is known that each standard weighs on the average about $2\frac{1}{2}$ tons, some idea of the quantity may be obtained. But this was not all, for in another corner of the yard there was stacked about £1,500 worth of deals ready to be passed into the saw-mills as occasion demands. The treatment of the timber is a very important point, for if it is used in a green state the appliances will suffer. So as to season the wood properly, in stacking each board is separated from the next by means of cross-bars, thus ensuring an efficient circulation of air. This arrangement costs money, but Mr. Tamlin says that it pays in the end. A perfect account of all lumber received into the yard is kept, each stack being dated the day it arrives, so that the exact age of each consignment is recorded. Before leaving the yard we were shown a huge heap of crates of all sizes. It appears that about 700 incubator and brooder-crates are kept ready-made, so that all appliances can be dispatched as soon as ordered.

Leaving the timber-yard, we passed into the saw-mill, where the "hands" were busily engaged in converting "deals" into boards about one inch in thickness. The "cross-cut" and the circular-saws, together with the planing machine, are all electrically driven, as are also the machines in the various other shops. Readers are aware that within recent years the making of houses has been added to the manufacture of incubators and brooders, and the shop where these are constructed is a large brick building some 120ft. long by 35ft. wide. The system adopted here is different to that followed in the incubator department, for in this case each man constructs a whole house himself. He is given a board on which is printed the exact size of every piece of wood to be used and he is also given the timber, cut up into the necessary lengths. To save labour, a cross-cut saw, placed in the centre of the shop, supplies the workmen, the timber being carried from one to the other by means of a special elevated carrier that runs

the entire length. The carpenters are employed all the year round keeping the stock on hand to the desired number. At this season of the year there are usually about 500 houses ready for instant dispatch.

In making the rearers the same plan is followed—namely, that each man is given a whole machine to complete. The timber that is used for these



A SUSPENDED "CROSS-CUT."

is well seasoned, for it is kept at least sixteen months before being made up. This has been found necessary, for any opening at the joints would prove fatal to success. Again, a large stock of these is maintained, there being at the time of our visit about 400 finished brooders. The metal fittings for these machines, as well as

TRADE SUPPLEMENT

for the incubators, are all made in the same shop. The joints are all made with four folds and then soldered. Copper is used for the tanks, &c., and a very large amount is made up annually.

Mr. Tamlin made his name by his incubators, and therefore this section of the works was specially interesting to us. In this case each man is set to a special piece of work. For instance, one makes the frames for the lids of the drying-boxes, another the fronts and backs, again another the drawers, and so on with every part

polish, and afterwards into the furnishing department, where the finishing touches are given. One of the most surprising sights we have seen in this direction was the incubator store-room, for there were 900 machines of all sizes stacked away ready for dispatch. It shows the strides that poultry-keeping has made when it is known that customers will be found for every one, and that by May, in all probability, the stock will be practically exhausted.

The trade in what are termed "smalls" is



A HUNDRED INCUBATORS IN THE MAKING.

of the machine. Pine-wood is used throughout, as it has been found that this withstands the high temperature better than the other kinds of timber. Each incubator takes about one month to make, and there are always about one hundred in various states of completion. As each machine is finished it is passed into the painting shop, where it receives three coats; it then goes into the varnishing-room to receive the final

also very great, the usual order for burners alone is 10,000 per annum, and often this has to be increased. Self-filling lamps, drinking-fountains, troughs, and a multitude of other articles are kept in their thousands. As showing the proportion of the business transacted, we may state that twelve tons of wire nails are used every year, and that the bolts are purchased by the thousand gross.

THE MARKETS & MARKETING

CONDUCTED BY    VERNY CARTER

Market Reports, Week Ending December 22.

The Christmas sales, which commenced in earnest on the 16th and 17th inst., proved most satisfactory to home producers. English turkeys realised very high values and were of excellent quality, although short in quantity. The cream of the English birds realised up to 2s. per lb. Irish birds, which were shorter in quantity than usual, were also of good quality. The supply of French birds was good and met with considerable favour. Importers of turkeys from Eastern Europe withheld their supplies during the early part of the week, hoping by so doing to realise better values; but the weather turned milder and set in wet, and retailers withheld from speculating. Consequently during the last two days of the week there was a glut of cheap foreign turkeys. This did not affect the trade in English birds to any considerable extent, as home producers generally had forwarded their birds in time for the first of the Christmas sales.

Week Ending December 29.

A very strong reaction set in, and values fell very much all round. Owing to the weather being so unfavourable for keeping poultry, many retailers consigned considerable quantities of the turkeys they had left on hand back to the markets, to be sold for what they would fetch. Large quantities of chickens were put into cold store, to clear the market of the glut. Salesmen refused to deal at all with many consignments of foreign turkeys, and returned them to their consignors. There is generally a breaking away in prices just after Christmas, but this year it commenced two days before, owing almost entirely to the foreign importers holding back their supplies to the last moment.

Week Ending January 5.

Trade remained depressed. Supplies were moderate. Prices were generally lower for moderate qualities of poultry. The cream of the poultry realised good values, as producers refrained from sending forward supplies owing to the depression prevailing. English eggs were more plentiful, and met with fair demand.

Week Ending January 12.

Trade showed considerable signs of improvement. Salesmen were inquiring for further supplies of chickens,

which were short, producers still refraining from sending forward. Pheasants were plentiful, and meeting with slow demand. The elections had a considerable effect on the markets. Both foreign and English eggs were more plentiful, and values for the former receded considerably.

IMPORTS AND CONSUMPTION IN 1909.

THE hon. secretary of the National Poultry Organisation Society, in his annual summary of the poultry industry in 1909, gives the following figures as to the imports of eggs and poultry:

	1907.		1908.		1909.
Eggs	£7,135,530	...	£7,183,112	...	£7,235,302
Poultry	903,847	...	934,679	...	920,699
Totals ...	£8,039,377		£8,117,791		£8,156,001

As seen below (the Report continues), the increase in eggs is entirely due to a rise in values and not in quantities. That advance as compared with 1908 was £52,190. On the other hand, poultry was £13,980 less than in 1908, so that the net increase was £38,210, as against £78,414 in the previous year.

The Trade and Navigation Returns for 1909 record that the number of eggs imported into the United Kingdom from all countries were 17,710,441 gt. hds., or 2,125,252,920, which was a decrease from the total of 1908 of 499,629 gt. hds., or 59,955,580; or 857,460 gt. hds. (102,895,300) less than in 1907. The high-water mark in volume of imports was in 1903, since which time there has been a steady decline. The figures for 1909 show a reduction as compared with 1903 of 2,138,458 gt. hds., or 256,661,820, which is more than 16,000 tons. Increases in quantities are reported from Russia (916,152 gt. hds.), France (96,575 gt. hds.), and other countries (602,747 gt. hds.); whilst decreases are shown from Denmark (359,407 gt. hds.), Germany (581,195 gt. hds.), Italy (440,604 gt. hds.), Austria-Hungary (687,425 gt. hds.), and Canada (46,409 gt. hds.). The supplies credited to Germany come from Southern

Russia, and Canadian supplies are practically no longer of account. Below are given the figures for the respective countries, with percentages of quantities :

EGGS IMPORTED, 1909.			
From	Quantities, gt. hds.	Values, £	Percentages of quantities.
Russia	8,154,635 ...	2,928,857 ...	46.05
Denmark	3,428,200 ...	1,698,329 ...	19.36
Germany	612,817 ...	255,003 ...	3.46
France	1,047,860 ...	475,335 ...	5.91
Italy	875,758 ...	400,450 ...	4.94
Austria-Hungary ...	1,300,246 ...	547,005 ...	7.34
Canada	3,984 ...	2,182 ...	0.02
Other Countries ...	2,286,941 ...	928,141 ...	12.92
Totals.....	17,710,441	£7,235,302	100.00

Russia has advanced, as compared with 1908, by 7.28 per cent. ; France 0.64 per cent., and other countries 4.87 per cent. ; whilst Denmark has decreased 2.14 per cent. and Canada 0.26 per cent.

For several years the declared average values have steadily advanced. In 1898 these were 5s. 10d. per gt. hd. Below are the figures since 1900 :

1900 ...	6s. 5½d. per gt. hd.	1906 ...	7s. 6½d. per gt. hd.
1902 ...	6s. 7½d. "	1908 ...	7s. 10½d. "
1904 ...	6s. 9d. "	1909 ...	8s. 2d. "

or an advance in the nine years of 1s. 8½d. per gt. hd., due to increased demand and improved methods of marketing. The figures for the respective countries are :

DECLARED AVERAGE VALUE OF EGGS IMPORTED.			
From	1907. Per gt. hd.	1908. Per gt. hd.	1909. Per gt. hd.
Russia	6s. 7¾d. ...	7s. 1½d. ...	7s. 2d. ...
Denmark	9s. 4½d. ...	9s. 3¾d. ...	9s. 6¾d. ...
Germany	7s. 3½d. ...	7s. 2½d. ...	8s. 3¾d. ...
France	8s. 9¼d. ...	8s. 6¾d. ...	9s. 0¾d. ...
Italy	8s. 9½d. ...	9s. 0d. ...	9s. 1¾d. ...
Austria-Hungary.....	7s. 7d. ...	7s. 6¾d. ...	8s. 4¾d. ...
Canada	9s. 1d. ...	9s. 10d. ...	10s. 11d. ...
Other Countries	7s. 0½d. ...	7s. 4¾d. ...	8s. 6½d. ...

It will be seen, therefore, that supplies from every country have advanced in value, some to a considerable extent. Apart from Canadian eggs, which only come in the winter and are almost at the vanishing point, Danish rank highest, with Italians second. The German demand is competing strongly with our markets in Italy.

As already stated, there is a slight reduction in imports of poultry, but, as values only are given, we have no means of knowing whether this is in numbers or not.

IMPORTS OF POULTRY.			
From	1907.	1908.	1909.
Russia	£277,799 ...	£360,362 ...	£351,918 ...
France	181,942 ...	170,387 ...	156,085 ...
Austria-Hungary	87,335 ...	114,037 ...	108,542 ...
United States of America...	203,588 ...	152,135 ...	149,552 ...
Other Countries.....	153,183 ...	136,758 ...	154,602 ...
Totals	£903,847	£933,679	£920,699

In each case the variations are small. The exports of poultry in 1909 are stated to be, in value, £20,617, and re-exports £36,306, or a total of £56,923, the former of which is principally for breeding stock, but we feel confident it is understated.

Unfortunately the Poultry and Production Census taken in 1908 has not yet been issued, and we are com-

pelled to estimate as in former years, so far as British production is concerned, using the figures of the Irish Department of Agriculture for 1908 as a basis for Ireland. Estimated consumption in United Kingdom :

	Eggs.	Poultry.	Totals.
Foreign produce ...	£7,235,302 ...	£920,699 ...	£8,156,001
Irish produce (1908) ...	3,050,000 ...	850,000 ...	3,900,000
British produce	6,000,000 ...	2,750,000 ...	8,750,000
Totals	£16,285,302 ...	£4,520,699 ...	£20,806,001

The wholesale values of eggs and poultry consumed are, therefore, nearly twenty-one million pounds sterling, of which 39.2 per cent. are foreign and 60.8 per cent. of native production. Our estimate is that the consumption of eggs in the United Kingdom in 1908 was as follows :

Foreign produce	2,125,252,920
Irish produce.....	878,659,325
British produce.....	1,440,000,000

Total 4,443,912,245

which is equal to about 280,000 tons—a stupendous quantity.

SOUTH AUSTRALIA.

STEADY RISE IN THE VALUES OF EGGS.

MR. D. F. LAURIE, the Government poultry expert of South Australia, gives in a recent issue of the *Journal of Agriculture* for South Australia the following table showing the total transfers of eggs from South Australia for the years 1905-6-7-8 :

1905 ...	2,842,078 doz., valued at	£102,932
1906 ...	2,760,731 ..	106,264
1907 ...	3,116,142 ..	120,211
1908 ...	2,832,355 ..	127,500

The average prices per dozen for the eggs transferred each year are as follows : 1905, 8.69d. ; 1906, 9.23d. ; 1907, 9.25d. ; 1908, 10.8d. ; all F.O.B. The figures show a steady increase in value. Allowing 1d. a dozen for packing, and the usual commission of 5 per cent., the following prices are those the producers would receive in Adelaide for all sound eggs sent in by him and paid for : 1905, 7.26d. ; 1906, 7.77d. ; 1907, 7.79d. ; 1908, 9.26d.

New South Wales has increased her demands, and so has Victoria, but there is little doubt that both States experienced considerable shortage due to bad seasons. Although general prosperity and increase in population may mean larger consumption, it must not be forgotten that in both States production is increasing, and will go on increasing. Western Australia, which has been in the past our best customer, is now almost on a level with New South Wales. Compared with 1905 there has been a falling-off of 601,000 doz. in 1908.

The successful issue of the shipments to England in 1906 and 1907 proved that there we have a splendid market, and also that we can land our eggs in perfect condition. It is true that there were a few details which have since been perfected, and the package and packing which were to have been adopted in 1908 leave nothing to be desired.

TABLE OF PRICES REALISED FOR HOME, COLONIAL, AND FOREIGN POULTRY, GAME, AND EGGS FOR THE FOUR WEEKS ENDED JAN. 19, 1910.

ENGLISH POULTRY—LONDON MARKETS.

DESCRIPTION.	PRICES REALISED DURING THE MONTH.			
	1st Week.	2nd Week.	3rd Week.	4th Week.
	Each.	Each.	Each.	Each.
Surrey Chickens	2/9 to 5/0	2/9 to 5/0	2/9 to 5/0	2/9 to 5/0
Sussex "	2/9 " 5/0	2/9 " 5/0	2/9 " 5/0	2/9 " 5/0
Yorkshire "	2/6 " 4/6	2/6 " 4/6	2/6 " 4/6	2/6 " 4/6
Boston "	2/6 " 4/6	2/6 " 4/6	2/6 " 4/6	2/6 " 4/6
Essex "	2/6 " 4/6	2/6 " 4/6	2/6 " 4/6	2/6 " 4/6
Capons	2/6 " 4/6	2/6 " 4/6	2/6 " 4/6	2/6 " 4/6
Irish Chickens	2/6 " 3/6	2/6 " 3/6	2/6 " 3/6	2/6 " 3/6
Live Hens	1/8 " 2/6	1/8 " 2/6	1/8 " 2/6	1/6 " 2/3
Aylesbury Ducklings..	—	—	—	—
Ducks	3/0 " 4/0	3/0 " 4/0	3/0 " 4/0	3/6 " 4/6
Geese per lb.....	0/7 " 0/9	0/7 " 0/9	0/8 " 0/9	0/8 " 0/9
English Turkeys per lb.	0/10, 1/6	0/10, 1/6	0/8 " 1/0	0/8 " 0/11
Irish Turkeys ... "	0/10, 1/3	0/10, 1/3	0/8 " 0/11	0/8 " 0/10

ENGLISH GAME—LONDON MARKETS.

DESCRIPTION.	PRICES REALISED DURING THE MONTH.			
	Each.	Each.	Each.	Each.
Grouse	— to —	— to —	— to —	— to —
Partridges.....	2/9 " 3/0	2/9 to 3/0	2/6 to 3/0	2/6 " 2/9
Pheasants.....	2/9 " 3/0	2/9 " 3/0	1/6 " 2/3	1/9 " 2/3
Black Game	—	—	—	—
Hares	4/0 " 5/0	3/0 " 5/0	2/3 " 3/3	2/6 " 2/9
Rabbits, Tame	1/3 " 2/6	1/3 " 2/6	1/3 " 2/3	—
" Wild	0/9 " 1/2	0/9 " 1/2	0/6 " 1/1	0/6 " 1/1
Pigeons, Tame	—	—	—	—
" Wild	—	—	—	—
Wild Duck	2/0 " 2/6	2/0 " 2/6	2/0 " 2/6	2/0 " 2/6
Woodcock	1/6 " 2/6	1/6 " 2/6	1/6 " 2/6	1/6 " 2/6
Snipe.....	—	—	0/6 " 1/0	0/6 " 1/0
Plover	0/5 " 0/6	0/5 " 0/6	0/5 " 0/6	0/5 " 0/6

ENGLISH EGGS.

MARKETS.	PRICES REALISED DURING THE MONTH.			
	Per 120.	Per 120.	Per 120.	Per 120.
LONDON	19/2 to 21/0	19/2 to 20/0	18/4 to 19/6	18/4 to 16/8
Provinces.	Eggs per 1/-	Eggs per 1/-	Eggs per 1/-	Eggs per 1/-
MANCHESTER ...	5 to 6	5 to 7	5 to 8	7 to 8
BRISTOL	1/10 per doz.	1/10 per doz.	1/9 per doz.	1/9 per doz.

FOREIGN POULTRY—LONDON MARKETS.

COUNTRIES OF ORIGIN.	PRICES REALISED DURING THE MONTH.			
	Chickens. Each.	Ducks. Each.	Ducklings. Each.	Geese. Per lb.
Russia	1/9 to 2/6	—	—	—
Belgium	—	—	—	—
France	—	—	—	—
United States of America	—	—	—	—
Hungarian	—	—	—	—
Canada.....	—	—	—	—
Australia	—	—	—	—

FOREIGN GAME. LONDON MARKETS.

COUNTRIES OF ORIGIN.	PRICE EACH DURING MONTH.	
	2/3 to 3/6	1/8 " 1/9
Capercailzie	1/2 " 1/3	—
Black Game.....	—	—
Partridge.....	—	—
Quail	—	—
Bordeaux Pigeons	0/9 " 1/4	—
Hares	—	—
Rabbits	0/5 " 0/8	—
Snipe	—	—

IMPORTS OF POULTRY AND GAME. MONTH ENDED DEC. 31, 1909.

COUNTRIES OF ORIGIN.	DECLARED VALUES.	
	Game.	Poultry.
Russia	£3,300	£68,638
Austria-Hungary	1,111	66,457
France	40	103,169
United States of America	2	3,882
Other Countries	5,422	71,629
Totals	£9,875	£313,775

IRISH EGGS.

DESCRIPTION.	1st Week.	2nd Week.	3rd Week.	4th Week.
	Per 120.	Per 120.	Per 120.	Per 120.
Irish Eggs	14/0 to 15/6	14/0 to 15/0	13/0 to 14/6	12/0 to 13/0

FOREIGN EGGS.

DESCRIPTION.	1st Week.	2nd Week.	3rd Week.	4th Week.
	Per 120.	Per 120.	Per 120.	Per 120.
French ...	15/0 to 17/0	14/6 to 17/0	13/6 to 16/0	11/0 to 13/0
Danish ...	14/0 " 17/0	12/0 " 16/0	11/0 " 15/6	11/0 " 13/6
Italian ...	12/6 " 14/6	12/6 " 14/0	11/6 " 13/6	10/0 " 12/0
Austrian...	9/0 " 11/6	8/9 " 11/6	8/9 " 11/0	6/9 " 11/0
Russian ...	8/9 " 10/3	7/6 " 9/0	8/0 " 8/6	6/6 " 7/0
Australian..	—	—	—	—
Canadian..	—	—	—	—

IMPORTS OF EGGS. MONTH ENDED DEC. 31, 1909.

COUNTRIES OF ORIGIN.	DECLARED VALUES.	
	Quantities in Gt. Hund.	Values.
Russia	744,062	£305,854
Denmark	330,769	197,989
Germany	75,218	33,016
Italy	38,994	23,903
France	22,758	16,801
Canada	1,212	725
Austria-Hungary	128,046	60,390
Other Countries	309,187	119,719
Totals.....	1,650,246	£758,397

ANSWERS TO CORRESPONDENTS.

The Editor will be glad to hear from readers on any Poultry Topics, and all Queries addressed to the paper will be answered if possible in the issue following their receipt. The desire is to help those who are in any difficulty regarding the management of their poultry, and accordingly no charge for answering such Queries is made. Unless stated otherwise, Queries are answered by

F. W. PARTON,

Lecturer in Aviculture, The University, Leeds.

Poultry-Farming in England.

1. What part of the South of England is most suitable?
2. Is the Isle of Wight a good spot? If so, does freight kill the profit?
3. Would a spot ten miles from London be better than, say, thirty miles, allowing that climate near London is not of the best?
4. What capital would be required to start a farm such as I sketch? Say 100 good pullets with 10 cockerels for breeding purposes, and 200 pullets with cockerels for table-eggs, and breeding table-birds; incubators, brooder, sleeping-houses, wire netting, tools, &c.
5. What is roughly cost of food per month for 100 birds, purchasing in large quantities, and obtaining lowest cash rates?
6. Given average luck, average management of a beginner who knows a good deal of the work, combined with excellent knowledge of business principles, would such a farm pay expenses of food, &c. (not increase of stock, houses, &c.), in first year; for purposes of argument, taking income from table-birds and eggs only.
7. Allowing that a 200-egg incubator is used (with skill), what profit from the farm (if any) may be expected the second year?
8. Cannot an incubator be used profitably all the year round? Would there not be a steady demand at all times for at least table-birds?
9. I may mention that the farm would be worked without paid labour, or with at most a lad at 3s. or 4s. per week. I do not know if you have published an article based on similar questions to mine, as I have only just subscribed to your magazine, but should say that such an article, giving very full details, figures, and plans of starting a farm on a small scale, would be of great interest.—H. F. F. (Ceylon).

1. Almost any part for egg-production and sale of stock. 2. Yes; there is a large local demand, as the Isle of Wight does not meet its own requirements. 3. As a rule almost any district within thirty miles of London, if you can find a suitable place. That, however, is the main difficulty. 4. Would vary in accordance with your scheme. Probably £400 to £500. 5. About fivepence per month each. 6. Depends upon management and ability. Others have succeeded. 7. Impossible to say. 8. Yes. 9. See article on Poultry-Keeping as a Business in issue of May, 1909. E. B.

Age of Cockerel.

How old should a cockerel be before I can mate him to get fertile eggs for hatching table-chickens?—B. M. A. (Bournemouth).

In view of the generally well-known fact that breeds differ in precocity, and that individual birds vary considerably in this respect, rules do not apply equally in all cases. However, assuming that your breed is a suitable one for your purpose, a vigorous, well-grown February or March, 1909, hatched cockerel should give good results if mated now with two-year-old hens.

Home-made Appliances.

Do you think I could make a satisfactory brooder, heated with a hurricane lamp in the middle? I enclose a rough sketch of my idea, and shall be glad of your opinion as to its practicability.—L. E. W. (Acton).

Your sketch shows some ingenuity, but you would do much better to consult the advertisements of the appliance-makers. A considerable experience of home-made and factory-made appliances has taught the wisdom and economy of buying these things from a good maker. The fatal defect of your idea is that it does not sufficiently provide for the carrying off of the lamp fumes. Good brooders are now so comparatively cheap that it does not pay to make them and take unnecessary risks.

Turkeys on Small Range.

Would about two acres of grass land be large enough to carry turkeys, and if so, how many could I stock for breeding?—C. G. (Southgate).

Two acres of grass land, if suitably situated, drained, and not too heavy as regards the character of the soil, would certainly be capable of carrying a limited number of turkeys—a cock and perhaps as many as four hens—but the profitableness of the enterprise is much more uncertain. To produce a healthy and sufficiently profitable progeny, turkeys really need the run of a wide range of grass, arable, and woodland; although with exceptional management I have known breeding and rearing to be carried on year after year in relatively narrow quarters. Nevertheless methods that have been found possible in some circumstances are not always advisable for general adoption, and I certainly cannot recommend you to take up turkey-breeding as a serious occupation upon two acres.

Indications of Sex.

I want to know how to tell the sex of chickens as early as possible, but do not know any reliable indications, and shall be glad if you will help me.—P. S. (Richmond).

The age at which it is possible to distinguish the sex depends to some extent upon the breed, but also, and very considerably, upon the powers of observation and the length of experience of the breeder. In some breeds it is possible, for those who are familiar with the birds, to separate the sexes before the chickens are three weeks old; but the inexperienced would be in doubt long after certainty was possible to the old breeder. Generally speaking, the pullets feather rather more quickly than the cockerels, and especially so upon the body; but in the predominant sex the common indications are size of head and development of comb. Moreover, the sex of the male is early noticeable in the general bearing of the bird. There are,

of course, numerous other signs that apply to breeds and groups, but are not of sufficiently general application—and no breed is mentioned by you. You must mainly depend upon your own experience.

Moisture in Incubators.

I was reading the other day that it was advisable to place some water trays in hot air machines, as by so doing the percentage hatch was higher. Is this so, and if so, what form does the same water tray take?—I. T. (Guildford).

When moisture is necessary in an incubator the maker supplies water trays suitable to fit his particular form of incubator. Your machine, however, may be placed in a room where the atmosphere is very dry, and if you desire to correct this, and the incubator is not so constructed that a water tray can be used, a saucer half full of warm water, in which a sponge is placed, put into the egg-drawer will cause evaporation of the moisture.

Brief Replies.

B. B. (Southwold): See this issue.

M. S. G. (Gravesend): 2s. 6d. to 3s.

J. R. (Wokingham): See reply to "Q. M." below.

B. B. L. (Bromley): See our advertising columns.

M. S. H. (Newbury): Yes; 160 per hen is a good average.

M. E. R. (Ipswich): Write to the G.W.Ry., Paddington Station, London.

W. F. (Burnley): Write to Secretary of the Burnley Fanciers' Society.

Q. M. (Pembroke): With room temperature of 60deg. F., work at 103deg. F. for first two days, then 104deg. F.

J. Mc. D. (Watford): If the pipes are at the back of the brooder, there is no harm in having the temperature up to 100deg. F.

THE UTILITY POULTRY CLUB YEAR-BOOK, 1910.*

THE new number of this excellent publication, which is now in its tenth year, contains the usual exhaustive information relating to the privileges of members, the laying competitions, and the club's receipts and expenditure, and several additional features of interest. We may state that the membership of the club now consists of nearly 1,200 subscribers, of whom half pay a minimum subscription of 2s. 6d., the commuted subscriptions of life members being represented by a reserve fund of £75 L.C.C. Stock. During the year some £20 has been distributed in prizes and specials for table-poultry at local shows. The accounts include the figures for the Twelve Months' Laying Competition, of which the Board of Agriculture showed its approval by making a grant of £35.

Nearly 1,000 pens are registered under 38 distinct breeds and varieties, the White Wyandottes occupying the largest space with 150 entries. In view of the interest in scientific breeding, the publication of this

register is most valuable; and for a similar reason the reference list of recent articles on poultry topics—the trustworthiness of which is guaranteed, so to speak, by the Utility Poultry Club's mention of them—is a help and an incentive to the poultry-keeper to find the most reliable sources of information.

The frontispiece consists of a portrait of the late E. W. Richardson, whose untimely death last July was recorded in our August issue. Page 23 is devoted to an account of his career. Such important matters as railway rates, postal facilities, and poultry instruction at agricultural colleges are also dealt with, while there is a comprehensive list of the poultry clubs, and twelve pages are devoted to monthly notes. Obviously a good deal of compression has been necessitated by the treatment of so many topics, but it has in nearly all cases been judicious. The book, of course, is given gratis to members.

THE WOMEN'S AGRICULTURAL AND HORTICULTURAL INTERNATIONAL UNION.

THE second annual dinner of Lady Farmers and Gardeners, organised by the Women's Agricultural and Horticultural International Union, will be held at the Imperial Restaurant, Regent Street, on Wednesday, February 16. It is hoped that many friends will attend, gentlemen as well as ladies. Particulars of the Secretary of the Union; Captain or Mrs. Barry, 12, Queen's Gate Terrace, S.W.; the Dinner Sub-Committee; or Mrs. T. Chamberlain, 5, Priory Mansions, Drayton Gardens, S.W. The Union will hold Produce Sales in the Conservatory of the Royal Botanic Society, Regent's Park, on the second and fourth Wednesdays of each month from February to June, and in October and November, from a stall supplied by members of the Union. Particulars may be had from the Secretary, 64, Lower Sloane Street, S.W.

TRADE NOTICES.

Mr. W. Holmes Hunt's Catalogue.

Besides Mr. Holmes Hunt's principal business in stock birds and eggs for setting, all at most reasonable prices, it is now announced that he has decided to make a special branch of table-poultry, ready plucked and dressed. The breeds that Mr. Hunt favours are Orpingtons, Leghorns, and Sussex, and Orpington ducks; it should be mentioned also that he makes all kinds of poultry-houses. His address is Brook House Poultry Farm, Hellingly, Sussex.

A White Wyandotte Specialist.

From Mr. Walter Howarth, specialist breeder of White Wyandottes at Berners Close, Grange-over-Sands, comes the catalogue of his birds and eggs for 1910. It should be noted that he is developing two distinct strains of White Wyandottes—winter layers and

* Published from 63B, Lincoln's Inn Fields, London.

selected layers—and that in the building up of these purchases have only been made from established breeders. In the lucid description of the various pens the reader will find what is necessary for his guidance in making a purchase.

T. Craven and Sons.

Some little time ago we had the opportunity of examining the poultry-basket made by this old-established Manchester firm, and have pleasure in testifying to its excellencies. Its principal features are the expanding partitions which lie close to the sides when not in use, the uniqueness of its general design and finish, and its lightness and durability. A cockerel may be put into a compartment, or when the partitions are expanded the compartment is suitable for two pullets. Many other specialities, such as traps, breeding-boxes, pigeon- and poultry-houses, hoppers, and perches are among the appliances produced by this firm, whose business address is 97, Corporation Street, Manchester.

Townsend's Chicago Meat Chick Feed.

This preparation, which is produced by Messrs. R. Townsend and Co., Limited, of the Stratford Mills, Stroud, Gloucestershire, contains a large proportion of cooked meat, and the corn with which this is mixed has been soaked in a special preparation of oil, calculated to promote rapid growth in chicks. The percentage of oil and albuminoids in the food is respectively 10 per cent. and 15 per cent., as against maize, barley, or wheat, which contains 4 per cent. oil and 10 per cent. albuminoids. The food is very popular and meets with a ready sale.

Mabie, Todd, and Co.

The "Swan" fountain pen was one of the earliest to solve the question of a reliable pen of this class, and it has steadily maintained its high reputation. The leaflet issued by Messrs. Mabie, Todd, and Co., of 79 and 80, High Holborn, London, who are the manufacturers of this invention, gives full particulars of how to fill the "Swan" and maintain it, so as to secure the best results. It may be noted that the firm supplies a special ink, "The 'Swan' Ink," which is recommended for use in the pens.

Mr. Tamlin's Exports.

The following is a list of Mr. W. Tamlin's exports for the month of December, 1909: Ten 100 incubators, six 60 incubators, five 200 incubators, ten 100 foster-mothers, to M. Lebaron, France; eighteen 100 incubators, ten 200 incubators, six 60 incubators, to M. Andre Masson, France; ten 100 incubators, six 100 foster-mothers, to Mr. Fletcher Bradley, Canada, per s.s. Montezuma; six 100 incubators, nine 60 incubators, to Messrs. Oakes and Co., Ltd., India; six 100 incubators, six 60 incubators, to Mr. H. Mascarenhas, Portugal, per the Ellerman line; one 100 incubator, to Mrs. Suter, Egypt; one 60 incubator, one 60 foster-mother, to B. E., Africa, per order of Army and Navy Stores, per s.s. Salaga; one 100 incubator one 100

foster-mother, to Mr. F. A. Jones, Germany; three poultry-houses, one 100 incubator, to Mr. J. Lagondakis, Egypt.

Mr. W. H. Cook's Exports.

During December and January William H. Cook, of the Model Poultry Farm, St. Paul's Cray, has dispatched the following fowls to clients abroad: To Buenos Aires, one pen each of Rhode Island Reds, White Cochins, Dark Brahmas, Black Wyandottes, Malays, Indian Game, Brown Leghorns, Andalusians, and La Bresse; to New Jersey, 12 Buff Orpington and 3 Black Orpington cockerels; to Garonne, France, a pen of White Orpingtons and an Indian Game cockerel; to Hyères, France, Buff Orpington, White Leghorn, and Andalusian pullets; to Crown Agents of Jamaica, one pen each White Wyandottes and Indian Game; to Seine, France, a pair of Buff Orpingtons; per ss. Glamorganshire to Singapore, 25 Minorca pullets, 4 cockerels, 25 White Leghorn pullets, and 4 cockerels; to Rotterdam, a Black Orpington cockerel, White Wyandotte cockerel, and one White Wyandotte cock for exhibition; to Buenos Aires, one pen each of Rhode Island Reds, White Wyandottes, Black Orpingtons, Buff Orpingtons, and Barred rocks.

RAILWAY NOTICES.

Railway Magic-Lantern Lectures.

The enterprise of the Great Northern Railway Company in preparing a set of illustrated lectures, which they are willing to loan to responsible persons—and to provide apparatus, lecturer, and operators at a nominal cost in cases where the proceeds of the entertainment are devoted to an agreed charitable object—is worthy of great praise. The following lectures, each illustrated with about 100 fine views, are now obtainable: (1) Lincoln and Lincolnshire, (2) Lynn, Sandringham, the Norfolk Broads and Coast Resorts, (3) Cathedrals and Abbeys on the East Coast Route, (4) Castles and Mansions on the East Coast Route, (5) the Yorkshire Coast and Spas, (6) the Highlands and Islands of Scotland. Inquiries respecting these should be addressed to the Chief Passenger Agent, Great Northern Railway, King's Cross Station.

Harwich Route to the Continent.

The splendid service of the Great Eastern Railway Co. viâ Harwich deservedly commands great popularity, both by reason of the fine fleet of steamers and the rapidity and regularity of the transit. In view of the Brussels International Exhibition to be held this year, the Antwerp route is certain to be largely used, for, leaving Liverpool Street in the evening, a good night's rest can be enjoyed, and the Belgian capital reached by 9.30 the next morning. For Central and Northern Europe the "Hook" steamers are more direct. Handbooks issued by the company afford particulars of many attractive tours by both services.

